

CANADIAN GEOGRAPHICAL JOURNAL

AUGUST
1943

VOL. XXVII
NO. 2

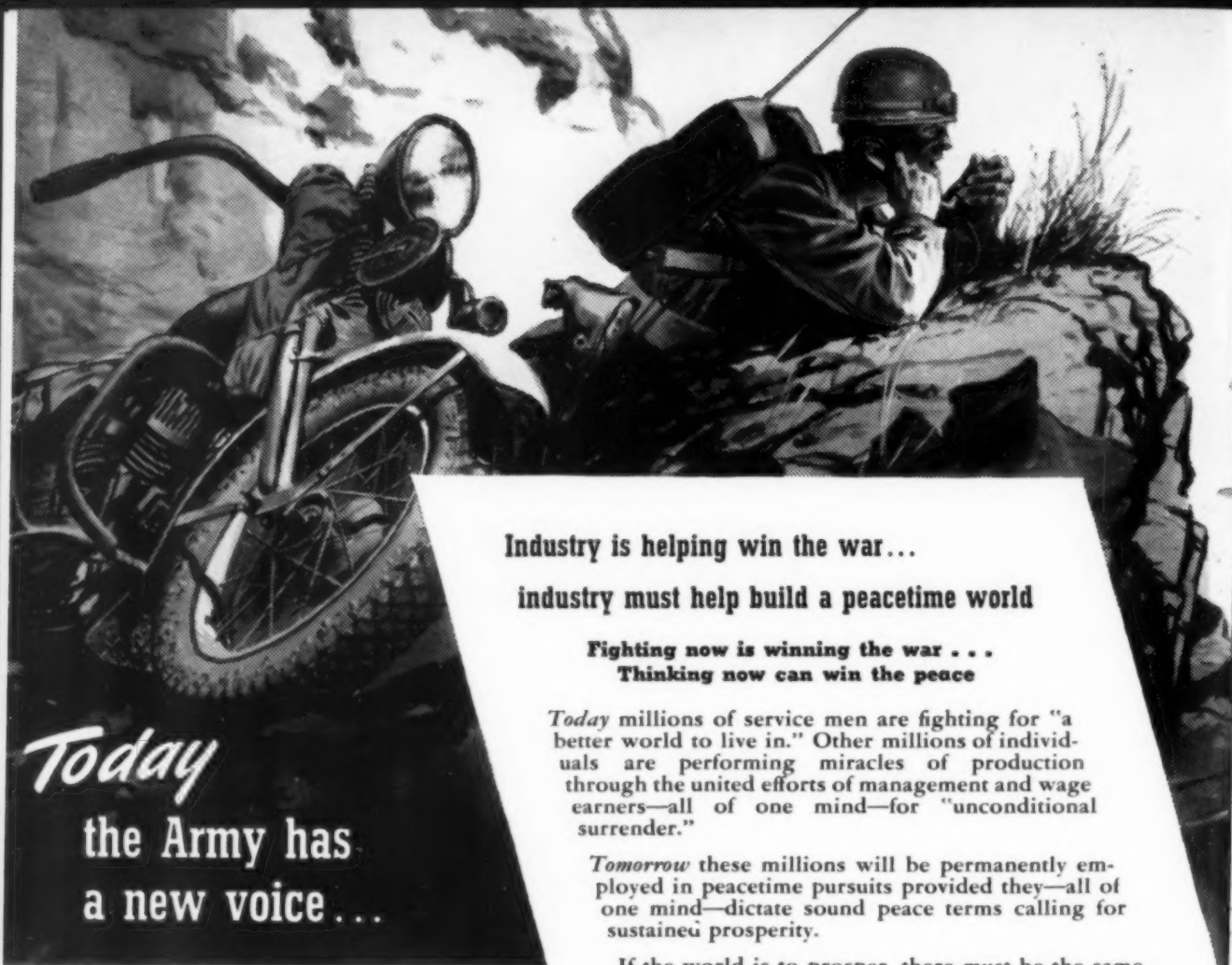


"DIEPPE, 19 AUGUST, 1942"

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CANADIAN GEOGRAPHICAL JOURNAL

Published monthly by
The Canadian Geographical Society
at 2151 Ontario St. E., Montreal

Editor — Gordon M. Dallyn

This magazine is dedicated to the interpretation, in authentic and popular form, with extensive illustrations, of geography in its widest sense, first of Canada, then of the rest of the British Commonwealth, and other parts of the world in which Canada has special interest.

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VOLUME XXVII No. 2

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The articles in this Journal are indexed in the *Reader's Guide to Periodical Literature* and the *Canadian Periodical Index* which may be found in any public library.

The British standard of spelling is adopted substantially as used by the Dominion Government and taught in most Canadian schools, the precise authority being the Oxford Dictionary as edited in 1936.

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Address all communications regarding change of address, non-delivery of Journal, etc., to the publication office, 2151 Ontario Street, East, Montreal, Canada, giving old and new address. On all new memberships, the expiry date will be printed on wrapper containing starting number. This will constitute a receipt for subscription.

Membership in The Canadian Geographical Society is \$3.00 per year in Canada and other parts of the British Empire, which includes delivery of the Journal, postpaid; in United States, Mexico, France, Spain, Central and South America, \$3.50; in other countries, \$4.00. Make membership fee payable at par in Ottawa.

Member Audit Bureau of Circulations.

Special Representatives:

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Europe: Norah C. Perry, 5 Upper Dagnall Street, St. Albans, Herts., England

Entered as second-class matter at the Post Office, Montreal, Canada.

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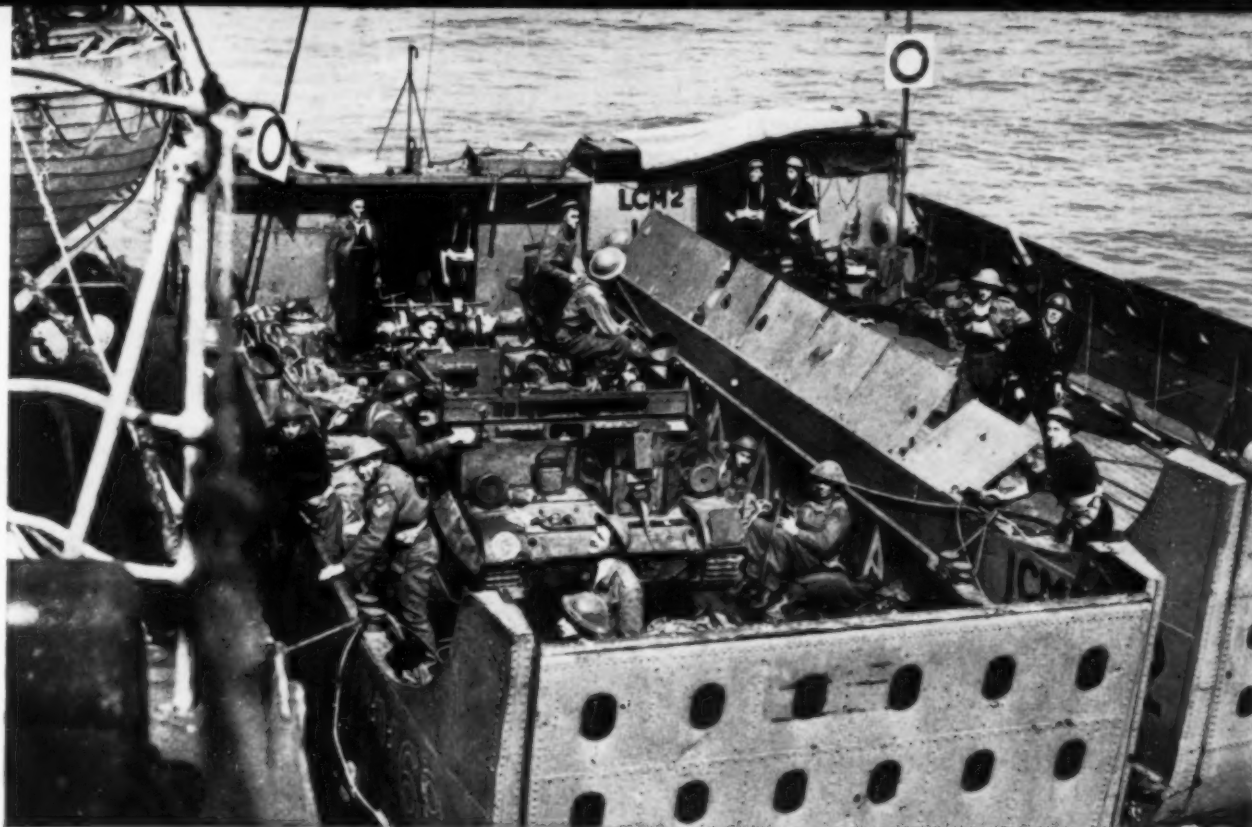
Canadian shipbuilders pay their tribute to the loyal heroism of those who sail our navy and merchant marine by a magnificent response to the cry, "Give us more ships!" The Bank of

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Vehicle landing craft, one carrying a Bren carrier, alongside a destroyer off Dieppe.

“DIEPPE, 19 AUGUST, 1942”

by MAJOR C. P. STACEY

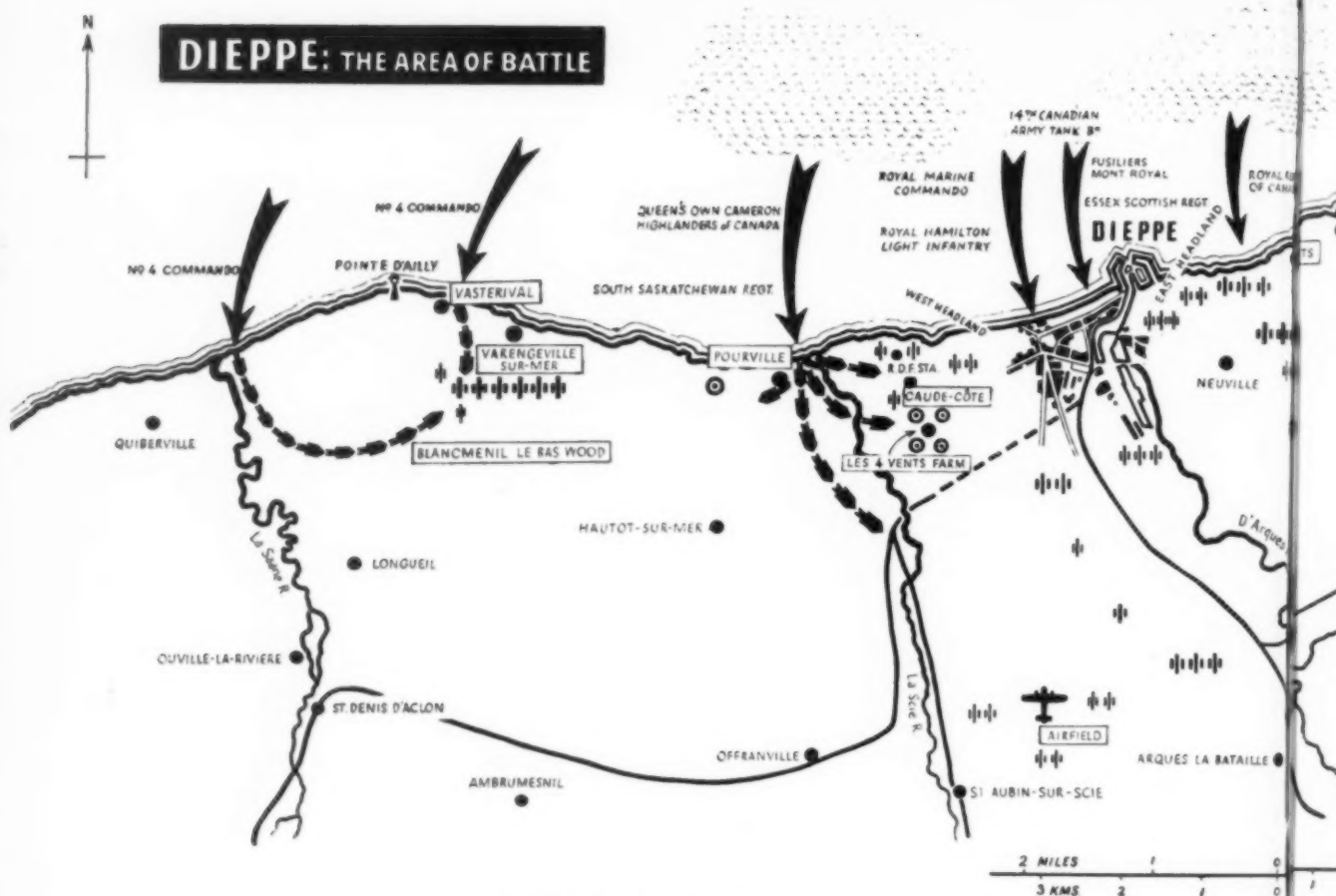
The Dieppe raid of 19 August, 1942, was the first large-scale operation of the Canadian Army Overseas in this war. This article appears one year after the battle. It attempts to present in brief compass the full story of the operation, so far as it can be published without giving the enemy information which he could turn to advantage against our troops on a later occasion. The author has had access to all documents relating to the raid, and in addition has interviewed many Canadian officers and men who took part in it.

THE fortunes of the Canadian Army in the present war have been in curious contrast with the events of 1914-1918. In the first Great War the Canadians were in the thick of the fighting in France from 1915 until the end. In this war, Canadian troops reached England in 1939, and since that time the Dominion's force there has grown into a powerful army. Yet the unforeseen course which the struggle has

taken has resulted in that army having little active employment so far; and three years and a half have been spent in perfecting its organization, equipment and training against the moment for the great offensive. As these lines are written (1) it has had only one day of heavy contact with the enemy: the 19th of August, 1942, when a considerable portion of the 2nd Canadian Division and certain other Canadian troops took the leading part in the daring and hazardous assault upon Dieppe.

Dieppe was not actually the first battle of the Canadian Army in this war: that was fought by the two battalions that took part in the defence of Hong Kong in December, 1941. But it was the first battle of the force officially entitled the Canadian Army Overseas — the main Canadian field army. It is needless to say that those who had watched the growth of this army had awaited with very special interest its first contact with the enemy.

(1) June, 1943



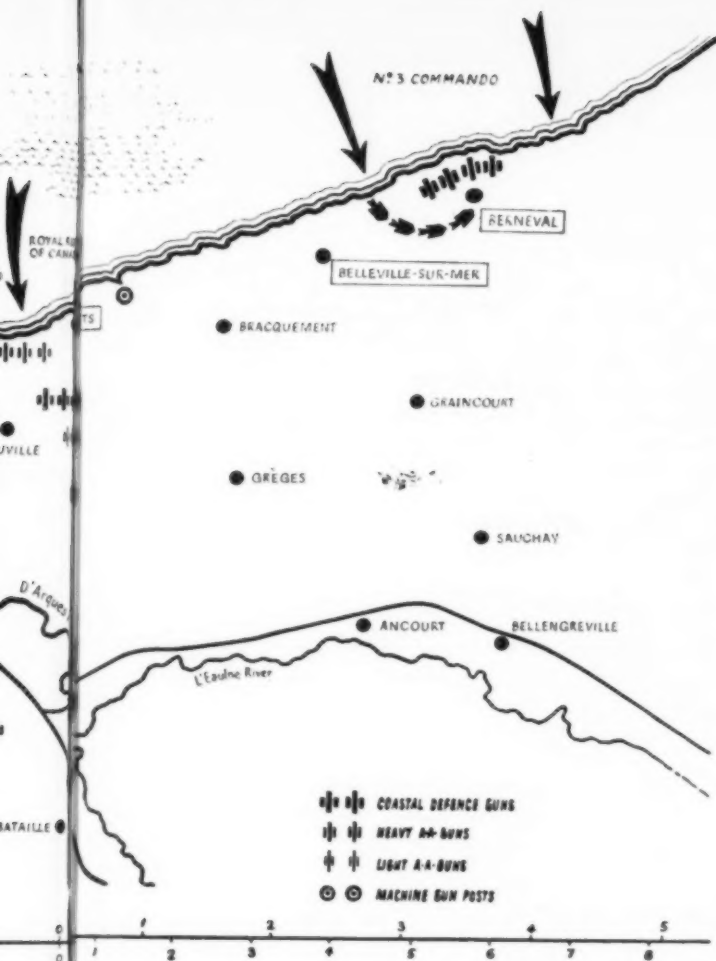
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No one doubted its essential quality; yet these were young and untried soldiers, well trained indeed, but lacking the actual experience of battle; and men sometimes asked themselves whether, suddenly projected into the ordeal of violent action without that gradual process of tempering which new troops could undergo in quiet sectors under the different conditions of the last war, they would acquit themselves in the same manner as the youthful veterans who stormed Vimy Ridge in 1917.

The test, when it came, was as difficult as could have been devised: an attack (designed to provide information and experience for the greater attacks ahead) upon one of the strongest points on the French coast—that coast which the Germans had been labouring for months to fortify against the ultimate assault which we had promised them. This is the story of how the Canadians passed that test.

Preparations for the Enterprise

On a certain morning Lieutenant-General B. L. (now General Sir Bernard) Montgomery, G.O.C.-in-C. South Eastern Command, visited Lieutenant-General A. G. L. McNaughton, G.O.C.-in-C. First Canadian Army, at his Headquarters, and informed him that G.H.Q. Home Forces and Combined Operations Headquarters were considering a raid on Dieppe, and that he had recommended that Canadian troops were those best suited for the task. After discussion, it was agreed that the Canadians should participate, and that the main body of the raiding force would be drawn from the 2nd Canadian Division (whose commander, Major-General J. H. Roberts, would become Military Force Commander for the operation) and from a Canadian Army Tank Brigade which would provide a battalion equipped with Churchill tanks. This battalion would be the first tank unit to participate in a Combined Operations



"DIEPPE, 19 AUGUST, 1942"

mass of intelligence concerning the area to be attacked had been collected, and was kept up to date by repeated air reconnaissance. A detailed model of the area was constructed, and was used for "briefing" the officers of the raiding force when the time came to let them into the secret.

Long before these officers and their men were told that they were destined for a specific operation, they were training hard for the task ahead. In addition to special "hardening" training and practice in embarkations and assault landings, two complete rehearsals were held on a section of the English coast where conditions were similar to those in the Dieppe area, and where there was even a sea-wall very like that at Dieppe, on which the tanks could practise the use of devices for crossing such an obstacle. When the moment for the operation came, every man had been thoroughly schooled in his own tasks; and in the final stage aerial photographs were used to explain to the raiders, down to private soldiers, the precise objectives that lay before them.

On 18 August the troops embarked on the vessels that were to carry them across the Channel — some on infantry landing ships from which in due time they would be put ashore in assault landing craft, others on personnel landing craft in which they would make the whole crossing. The tanks were carried in special landing craft which were going into action for the first time. That night the great convoy moved out from English ports on its perilous mission. The number of ships and craft was in the vicinity of 250, the heaviest fighting ships being eight small destroyers of the "Hunt" class. One of these, H.M.S. *Calpe*, was the headquarters ship; in her were General Roberts and the Naval Force Commander (Captain J. Hughes-Hallett, R.N.) with their staffs. The Air Force Commander, Air Vice-Marshal (now Air-Marshal Sir) T. Leigh-Mallory, remained at an R.A.F. station ashore, the point from which he could best control the great number of squadrons which were to play such an essential part in the operation; but he was represented in *Calpe* by Air-Commodore A. T. Cole. On another destroyer, H.M.S. *Fernie*, was a duplicate headquarters, to take over in the event of *Calpe* being destroyed or damaged.

The general plan of the operation has

raid; it would also be the first unit of the Canadian Armoured Corps ever to go into battle.

At the time when Canadians were thus brought into the project, planning for it was already far advanced. Five days before the interview between General McNaughton and General Montgomery, a meeting of British service authorities, presided over by Vice-Admiral Lord Louis Mountbatten, Chief of Combined Operations, had accepted a basic plan for the operation which was essentially that finally carried out. Canadian staff officers agreed that this plan offered good chances of success. From this time Canadian officers participated in the planning, and, over a period of weeks, a project which had been a mere outline was transformed into a complete and detailed scheme covering every detail of an exceptionally complicated operation. It is doubtful whether any military enterprise of similar scale has ever been so carefully planned. A tremendous

frequently been described (2). It was dictated by the nature of the coast in the Dieppe area—high cliffs with few openings, the largest gap being that at Dieppe itself—and by the enemy dispositions. It comprised four preliminary flank landings at dawn followed half an hour later by a frontal assault on Dieppe itself. British Special Service units (Commandos) were to make the outer flank attacks, directed against two heavy coastal batteries. The inner flank attack on the east, at Puits, was to be made by the Royal Regiment of Canada, which would then proceed to clear the dominant headland overlooking the Dieppe beaches from that side. On the west, the South Saskatchewan Regiment would go in at Pourville and occupy the even higher headland on this flank of Dieppe; while subsequently the Cameron Highlanders of Canada would land on the same beach and push inland to capture the aerodrome at Dieppe-St. Aubin, south of the town. The main attack on the Dieppe beaches would be made on the east by the Essex Scottish and on the west by the Royal Hamilton Light Infantry; while the first wave of tanks would land simultaneously with the infantry and, it was hoped, push through the town with the assistance of Engineer parties and co-operate with the Camerons against the aerodrome.

The Commandos and the Batteries

Throughout the night the convoy moved on towards the French shore, quite unobserved by the enemy. About an hour before the time set for the first landings, however, the group of landing craft on the extreme left flank, carrying the men of No. 3 Commando intended for the attack on the battery at Berneval, ran into very bad luck. They encountered a group of small enemy vessels; and a violent short-range naval action took place, in the course of which the landing craft were scattered. The plan for the attack on the battery was disrupted; and it is possible that this noisy action at sea served to put the German shore defences on the alert, though there is no evidence that any actual message of warning was passed. Not the least unfortunate aspect of the encounter was the fact that in the fight all wireless

installations on the gunboat carrying the group commander were put out of action, with the result that there was a long delay before the Force Commanders in *Calpe* received a clear account of what had happened.

Even after this misfortune, the attack on the Berneval battery was not wholly ineffective. Seven boatloads of men of No. 3 Commando got ashore, six on one beach, one on another. The former party, landing late and in daylight, was shot to pieces; but the latter, consisting of only 20 officers and men under Major Peter Young, was more fortunate. It landed without opposition and advanced boldly against the battery. An assault was out of the question, but it was possible to snipe the gunners and prevent them from firing effectively against our ships offshore. This Major Young and his men did for about an hour and a half; and having done so they withdrew without loss to the beach, where they were taken off by the same faithful craft that had put them ashore. It was a remarkable performance, and Major Young's Distinguished Service Order was well earned.

(2) See particularly the statement of the Minister of National Defence issued on 18 September and widely published in the press; and the official Combined Operations Command pamphlet, *Combined Operations, 1940-1942*, chaps. 14-18.



"DIEPPE, 19 AUGUST, 1942"

In striking contrast with the ill luck of No. 3 Commando on the extreme left was the fortune of No. 4 at Varengeville on the extreme right. The attack of this unit, commanded by Lt.-Col. Lord Lovat, went precisely according to plan. It landed in two parties on different beaches, and while one put in a holding attack to distract the attention of the garrison of the battery which was their objective, the other made a wide circle to take it in rear, and at the exact moment intended attacked it with the bayonet. In this attack Captain P. A. Porteous, although already wounded, particularly distinguished himself, taking command of the assaulting force after other officers had fallen, and leading it in the final rush. He was subsequently awarded the Victoria Cross.

Lord Lovat's force suffered a considerable number of casualties, but its success was complete. Four prisoners were brought back; every other German soldier was killed. The menace of this battery to our shipping off Dieppe was completely removed; for the six guns composing it were blown up before the Commando withdrew. The brilliant work of No. 4

Commando in this operation is a model of bold action and effective synchronization.

The Canadian Flank Attacks: Puits

The ill fortune which attended No. 3 Commando extended to the Canadian unit operating closest to it. The beach at Puits, and the gap in the cliffs through which the Royal Regiment was to penetrate inland, were very narrow. Success here depended upon surprise and upon the assault being made while it was still dark enough to confuse the aim of the German gunners. Neither of these conditions was achieved. Perhaps because of the fight with the convoy, the enemy was thoroughly alert; and the first landing craft touched down nearly twenty minutes late, when the light was considerably better than it would have been at 4:50 a.m., the time scheduled.

At the head of the beach was a sea-wall,

The "Boat Pool" off the French Coast during the raid. The following craft appear from right to left: a tank landing craft; a "Hunt" class destroyer, with personnel landing craft alongside; and a group of assault landing craft and vehicle landing craft.





Landing craft loaded with troops off the French Coast during the Dieppe operation.

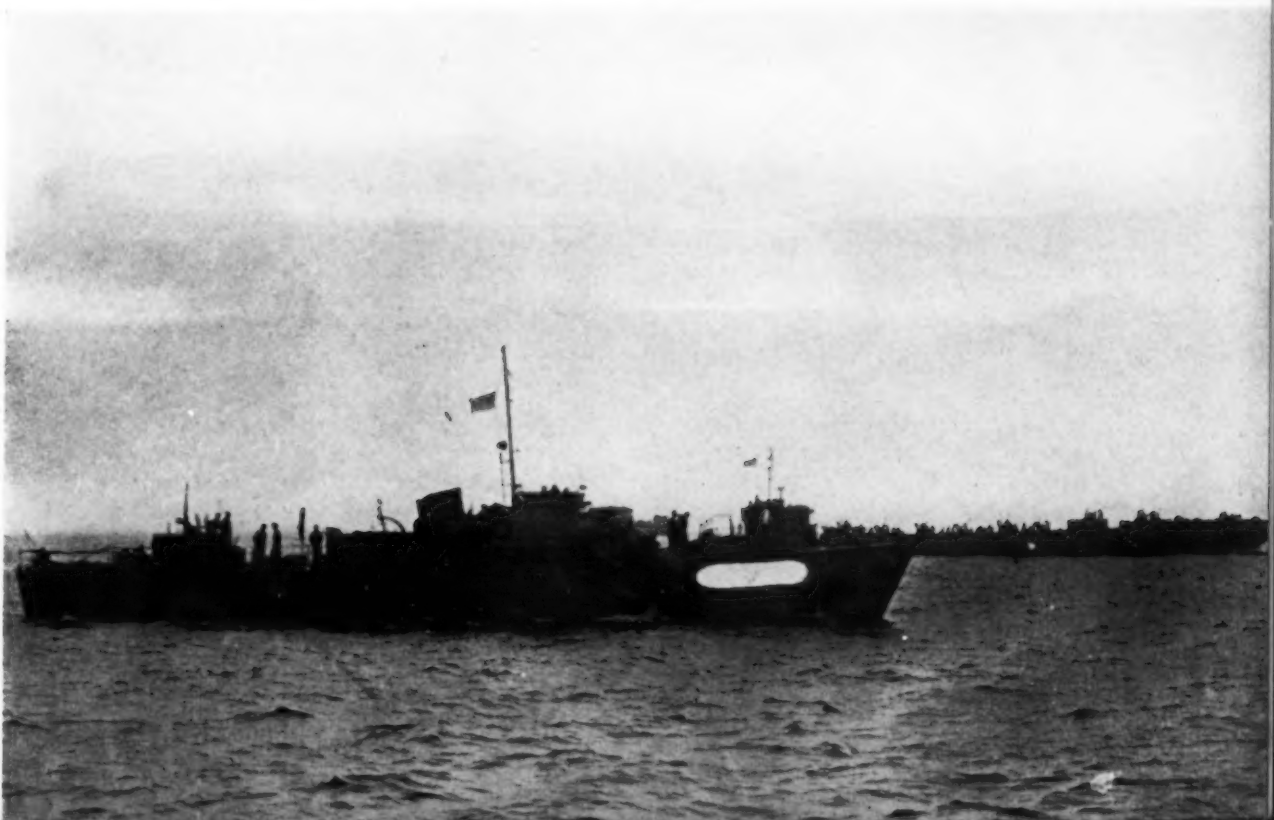
A "Hunt" class destroyer laying a smoke screen off Dieppe.





Bombs dropped by a Junkers 88 bursting among landing craft off Dieppe about eleven o'clock. While the R.A.F. and naval guns were dealing with a formation of bombers, one aircraft came in low and dropped these bombs.

A motor launch and a "Flak" craft off Dieppe during the operation.





Two wounded Canadian officers convalescing after Dieppe. Left:—Lt.-Col. D. Ménard, Les Fusiliers Mont-Royal, was awarded the D.S.O.; right:—Capt. J. A. Catto, Royal Regiment of Canada, was mentioned in Despatches.

with heavy wire upon it and behind it. As the Royals leaped ashore and rushed towards this wall, machine-gun fire came down from fortified houses in commanding positions, and many men fell. The platoons took shelter against the wall while steps were taken to blow breaches in the wire; but here they were enfiladed by another machine-gun to the left, and there were further casualties. Shortly mortars began to drop bombs upon the beach. Bangalore torpedoes were exploded in the wire; gallant officers and men rushed through the gaps, and many were shot down in an attempt to come to grips with the invisible enemy. Of those who crossed the wall, only one man, Corporal L. G. Ellis, returned to England to tell the story. He had passed through the wire and reached the top of the hill to the west. Here he searched a house which had lately been occupied by the enemy but was now empty; and he engaged and silenced an enemy machine-gun on the opposite side of the gully, where most of the enemy's strength seems to have been concentrated. Subsequently he made his way back to the beach, dragging with him a wounded man who was, however, killed by the explosion of a mine among the wire; and after a long period in the water he was picked up by one of our vessels. He was awarded the Distinguished Conduct Medal.

Only one party of the Royals of any strength got off the beach. It was a group of about 20 officers and men, including the regiment's Commanding Officer, Lt.-Col. D. E. Catto. It cut its way through the wire at the western end of the sea-wall, reached the hill-top and cleared two houses there; but machine-gun fire coming down on the gap in the wire cut it off from support. The party lay up in a nearby wood until it was clear that the raiding force had withdrawn and that there was

no hope of being taken off. At 4:20 p.m. they surrendered.

In the face of the fire maintained by the Germans from the cliffs, it was impossible to organize any systematic evacuation of the beach at Puits, although a series of valiant attempts were made by the Navy; and only a small proportion of the Royals returned to England. Their casualties from mortar and machine-gun fire had been very heavy; and when the remnant of the unit on the beach surrendered, somewhere between 10 and 11 o'clock in the morning, few can have been wholly unwounded.

This setback had an adverse effect upon the operation at large; for the failure to clear the headland immediately east of Dieppe meant that the numerous guns there were able to enfilade the main beaches in front of the town at comparatively close range. For the Essex Scottish in particular this was a most serious matter.

The Canadian Flank Attacks: Pourville

To the west of Dieppe the other Canadian flank attack met with better fortune. The landing craft put the South Saskatchewan Regiment ashore at the time intended, or within a very few minutes of it; and there was no opposition until the unit had landed, although the defence sprang into vigorous life as the westerners scaled the sea-wall and went forward into the village of Pourville.

On the western side of the village the situation continued to develop favourably. "C" Company, allotted to the task of clearing the high ground in this area, pushed rapidly forward, killing and capturing Germans in considerable numbers. One platoon, commanded by a sergeant, was held up for a moment by fire from an enemy entrenched position which wounded the sergeant and inflicted other casualties; then two private soldiers, Ptes. W. A. Haggard and G. B. Berthelot, took charge of the situation. Holding in front with part of the platoon, they delivered an encircling attack with the remainder; and in a few minutes the party of some fifty Germans holding the position were all either dead or prisoners. Pte. Berthelot had been wounded while attacking across

the open, firing his Bren gun from the hip; but he continued to fight throughout the morning. Both he and Pte. Haggard later received the D.C.M. "C" Company occupied its objectives and consolidated.

To the east, in the meantime, other companies had run into trouble as they moved towards the high ground rising above Pourville and separating it from Dieppe. Here the enemy was installed in strong positions, with every approach covered by mortar and machine-gun fire. At Pourville the River Scie flows into the Channel; and to reach the enemy the Canadians had to cross this stream by the bridge on the main road near the east end of the town. The bridge was completely commanded from the heights; soon it was carpeted with dead and the advance of the South Saskatchewan was held up.

At this point the unit's Commanding Officer, Lt.-Col. C. C. I. Merritt, came forward and took personal charge. Walking calmly into the storm of fire upon the bridge, waving his helmet and calling, "See, there is no danger here!", he led party after party across, and organized and led a series of attacks which captured several of the enemy positions commanding the bridge and the village. But in spite of all his exertions, and those of his men and of the men of the Camerons who were now mingled with them, the positions on the summit, and particularly the trench system of Quatre Vents Farm, could not be cleared. It was in the attack on Quatre Vents that Pte. O. O. Fenner distinguished himself; in the words of a sergeant who was near him, he "walked straight into enemy positions firing a Bren gun from his hip and reached the top of the hill killing a considerable amount of Germans". Badly wounded in both legs, he was dragged down the slope and brought back to England to receive the Military Medal.

As the Camerons came in to land, it was apparent to them that the South Saskatchewan had not succeeded in open-



Top:—German prisoners being brought ashore in England after the operation.

Centre:—Men of the Royal Canadian Army Medical Corps transferring wounded men from one craft to another during the operation.

Bottom:—Capt. J. C. H. Anderson, of the Royal Regiment of Canada, discusses his experiences with a Canadian brigadier after returning wounded from the operation.



Brig. W. W. Southam, E.D., commanding one of the infantry brigades engaged at Dieppe. Brig. Southam is now a prisoner of war.

Major A. T. Law. The unit pushed across the sea-wall into Pourville. To advance to the aerodrome by the route east of the Scie, while the enemy held the high ground there, was out of the question; and Major Law decided to move by the west bank. This he did with the main body of his battalion, leaving behind him one company and parts of two others, which had landed east of the river, to assist the South Saskatchewan.

The column pushed rapidly inland, destroying successive parties of Germans who sought to bar the way. After covering two miles or more, it overlooked the crossings of the Scie at Bas de Hautot, which it must pass to reach the aerodrome. But the tanks which according to the plan should have been in evidence east of the river were not to be seen; the crossings were strongly held by the enemy; and time was growing short. Major Law had already decided to fall back to Pourville when a wireless message was received ordering this action. The unit withdrew

ing up their bridgehead in the full manner expected; fighting was clearly in progress in the outskirts of Pourville, and shells were bursting in the water offshore. But the Highlanders pushed on; and as the landing craft drove into the shallows their pipes answered the whine of the shells and the rattle of the machine-guns.

The moon has arisen; it shines on that path
Now trod by the gallant and true;
High, high are their hearts, for their Chieftain
has said
That whatever men dare they can do.

As the craft neared the shore, the Camerons' commander, Lt.-Col. A. C. Gostling, was calling cheerfully to his men, identifying the types of fire that were coming down upon them. The boats touched down; he leaped on to the shingle and went forward; then there was a burst of fire from a pillbox at the east end of the beach, and he fell dead. The command devolved upon the second-in-command,

Brig. Sherwood Lett, D.S.O., M.C., E.D., who commanded one of the infantry brigades engaged at Dieppe. Brig. Lett was severely wounded when the tank landing craft on which his headquarters was carried touched down under heavy fire, but he nevertheless continued to direct operations.



Lt.-Col. John Begg, E.D., who won the D.S.O. by his work as second in command of the 14th Canadian Army Tank Battalion at Dieppe.

From an oil portrait by Lieut. L. P. Harris

by the route by which it had advanced, both suffering and inflicting casualties on the way.

Meanwhile those Camerons left in the Pourville area had been heavily engaged. Captain N. A. T. Young took part of his company inland on the east bank of the Scie and then led them uphill against the enemy, keeping their spirits up by his own example of cheerful courage. "I was kind of worried about all those bullets", one of the men wrote later, "but our company commander told us they weren't very good shots during the last war and that he didn't think they had had much practice since, so I took his word for it and kept going". Shortly afterwards Captain Young, standing up to lead a rush against an entrenched post, was struck by a mortar bomb and killed instantly.

The units in the Pourville area lost heavily during the final evacuation; for the enemy was able to bring fierce fire to bear upon the beaches from his lofty positions east of the village, and from the



high ground to the west, from which "C" Company of the South Saskatchewan had been forced by a strong counter-attack by enemy reserves. But the naval craft came in through the storm of steel with self-sacrificing gallantry (one Cameron wrote afterwards, "The L.M.G. fire was wicked on the beach, but the Navy was right in there"). The enemy's troops, who showed little stomach for really close fighting, were kept at arm's length by a courageous rearguard commanded by Lt.-Col. Merritt, whose energy was equal to his bravery (and that was boundless); and the greater part of both units was successfully withdrawn to England, though many of the men were wounded. The rearguard itself could not be brought off. It held out on the beach until about three in the afternoon. In the last stages Lt.-Col. Merritt, himself wounded, was seen to cross the wide expanse of shingle, pick up a wounded man lying at the water's edge, and carry him back through the flying bullets to the shelter of the sea-wall. When at last ammunition was running short and it was clear that there was no possibility of evacuation or of doing further harm to the enemy, the party surrendered.

Maj.-Gen. J. H. Roberts, D.S.O., M.C., who commanded the military force engaged in the Dieppe operation.





Brig. C. C. Mann, who was awarded the Distinguished Service Order for his work before and during the Dieppe operation, in which he was Senior Military Officer on the second headquarters ship.

The Frontal Attack on Dieppe

At 5:20 a.m. the units which were to make the main attack touched down on the long beach in front of Dieppe's Promenade — dedicated once to fashionable idleness and pleasure. The assault was covered by a heavy bombardment from the destroyers' 4-inch guns, and, as the landing craft approached the shore, squadron after squadron of cannon-firing fighter aircraft poured shells into the beach defences and the houses fronting the sea. The fighters were still attacking as the Essex Scottish on the left and the Royal Hamilton Light Infantry on the right leaped from their assault craft and began to make their way through the wire obstacles towards the town.

Here there was further bad luck. The craft carrying the first nine tanks should have touched down simultaneously with the infantry, so that the Churchills' 6-pounders might assist in beating down the beach defences; but through some navigational error these craft were ten or fifteen minutes late. During this period, between the cessation of the naval and air bombardment and the arrival of the tanks, there was no heavy support for the infantry; and the enemy, returning to his

guns, was able to bring destructive fire to bear upon the beaches.

At the west end of the Promenade, in front of the town, stood the large Casino. This building and pillboxes near it were strongly held, and clearing them took time; but the R.H.L.I. shortly broke into the Casino and with the aid of Engineer detachments rounded up the snipers lurking in it. Lance-Sergeant G. A. Hickson of the Royal Canadian Engineers made good use of demolition charges, shattering walls behind which snipers were sheltering and blowing his way into the emplacement of a heavy gun which was firing on our ships up to the moment when the sergeant's charge blew in the steel door and knocked out the crew. While this was going on parties of the R.H.L.I. pushed on through the Casino and some got across the bullet-swept boulevard at the rear into the town. One group, boldly led by Capt. A. C. Hill, penetrated into the centre of Dieppe and fought the enemy in the streets south of the Church of St. Remy, afterwards withdrawing to a cinema theatre on the front of the town and maintaining itself there for some time. Subsequently Sergeant Hickson got into the town with another party, cleared a house garrisoned by German infantrymen, and inflicted other casualties on the enemy before withdrawing. He received the D.C.M.

On the open eastern section of the beach the Essex Scottish could make no progress. The enemy was able to sweep this sector both from the houses and from the east headland, and the Essex were subjected to particularly heavy mortar fire. Three successive attacks were made across the sea-wall immediately after the landing. They were beaten back with loss so heavy that further offensive action became impossible. So far as is known, only one party of the battalion got across the Promenade and into the buildings. This consisted of about a dozen men led by C.S.M. Cornelius Stapleton, who, as reported in a letter from the unit's Commanding Officer, Lt.-Col. F. K. Jasperson, "accounted for a considerable number of enemy in transport and also enemy snipers". C.S.M. Stapleton was fortunate enough to escape injury, but is a prisoner of war.

The Tanks Go In

When the first tank landing craft touched down, they immediately attracted a veritable inferno of fire. The craft were badly damaged in several cases, and two of the first six to land could not be brought off the beach. Yet the tanks were duly landed, and their guns immediately came into action against the enemy.

It was reported and believed at the time that the sea-wall forming the seaward edge of the Promenade had proved a serious obstacle to the tanks and was responsible for the failure of many of them to get on. Close analysis of the facts reveals that this was not the case. The sea-wall at certain points rose not more than two feet above the shingle. Experiments had shown that the best way of getting tanks over such an obstacle was to lay tracks of chestnut paling on the beach to give them traction; and Canadian engineers had developed a track-laying device by which rolls of paling could be carried on the front of tanks and laid when required.

This device worked well. The first tank to leave the first craft to touch down laid its paling and with its assistance easily crossed the wall; the two tanks behind followed in its path and also mounted the wall. Exactly how many tanks thus crossed the wall is not known; the number may have been ten. Those that were stopped on the beach were in most cases victims of enemy shells which broke their tracks shortly after leaving the craft; but some became "bellied" in the loose shingle. Some tanks which had crossed the wall subsequently returned to the beach.

Ten tank landing craft touched down; and of the thirty Churchills they carried only one remained on board. Two tanks were "drowned" by going off into deep water. One of these was that of Lt.-Col. J. G. Andrews, Commanding Officer of the 14th Canadian Army Tank Battalion, whose craft went in with the second wave. He was seen to leave the tank and reach a launch which immediately was hit and burst into flames; he was not seen afterwards.

More serious obstacles than the sea-wall were the heavy road-blocks across the heads of the streets leading out of the

Promenade. To breach these with explosives was the business of the Engineers; but some of the demolition parties had not succeeded in landing, while others had had their stores destroyed. Those who could come within reach of the blocks went forward gallantly; but deadly enfilade fire from the lofty old Castle near the Casino cut many down. No block is known to have been breached, though a party courageously led by Lance-Corporal M. D. Sinasac, who was severely wounded and subsequently received the D.C.M., succeeded in exploding some charges against that closing the Rue de Sygogne.

In spite of the blocks, some tanks — three or four — succeeded in penetrating into the town, apparently by crashing through a house at the east end of the Promenade. What their later fortunes were is not known. We do know that other tanks cruised actively up and down the Promenade, engaging and silencing many enemy positions. One tank came to a halt near the back of the Casino, and it was its fire, directed at posts in and around the Castle, which enabled Sergeant Hickson's party to cross the boulevard and enter the town. This was probably the tank "Bert" (commanded by S.S.M. G. Menzies), which appears in this vicinity in German photographs.



Lt.-Col. C. C. I. Merritt, V.C., of the South Saskatchewan Regiment. Lt.-Col. Merritt's great gallantry at Pourville won him the first Victoria Cross awarded to a Canadian in this war.

Even the tanks immobilized by damage continued firing, operating, in effect, as pillboxes, and effectively supporting the infantry, who speak in the warmest terms of the manner in which they were fought. The skill and courage of the tank-crews certainly contributed to the withdrawal of many of the infantrymen. Men of the R.H.L.I. in particular speak of how one tank, stopped on the beach in front of the Casino, covered their re-embarkation by steadily engaging the enemy on the high ground to the west. Determined to cover the infantry to the last, the crews did not leave their vehicles until 12:25. By this time evacuation had virtually ceased; and very few of the tank men who landed returned to England. Thanks to the remarkable staunchness of their Churchills, however, the battalion had very few fatal casualties. Though hammered for hours with projectiles of every kind, the tanks' armour was not pierced.

The Landing of the Reserves

One battalion of infantry — Les Fusiliers Mont-Royal — was available to General Roberts as a floating reserve. When after considerable delay he received information of the ill luck of the Royals at Puits, he decided that other means must be found for clearing the east headland. With a view to an attack across the harbour area, he resolved to reinforce the Essex Scottish; for a report had been received that this unit was "across the beach into the houses" — that it had, in fact, effected a penetration which might now be exploited with good results. This report, we have seen, was inaccurate; it seems to have originated in a message relating to the work of C.S.M. Stapleton's little party, which by the time it reached *Calpe* had been magnified in the manner described. This and other misleading information caused General Roberts to order the Fusiliers to land and support the Essex; and at seven o'clock they went in.

The landing craft were received with very heavy fire. The unit was landed along the whole extent of the main beaches, and a considerable part of it was put ashore on the narrow strip of shingle under the cliffs west of the town. The men landed here were able to accomplish little, and most of them later became prisoners. Of the remainder of the unit, some were active in and around the Casino, while others were

pinned down by fire on the beach along with the greater part of the R.H.L.I. and the Essex. The Fusiliers' young Commanding Officer, Lt.-Col. D. Ménard, was severely wounded immediately after landing.

At least two parties of the Fusiliers got into Dieppe. One was commanded by Captain Guy Vandelac, who was subsequently reported as drowned during the withdrawal, but is now known to be a prisoner. The other, under Sergeant P. Dubuc, fought its way through the town into the harbour area, and was there surrounded and captured. The party, however, overpowered their guard, and Sergeant Dubuc succeeded in rejoining his unit on the beach. He received the Military Medal.

About eight o'clock, reports reaching *Calpe* indicated that the tanks were making progress and that our forces were in control of the western section of the main beach; while it was known that the Casino had been captured. It appeared that if additional forces could be brought to bear an important success might yet be obtained here. The only reserves now available were a detachment of Royal Marines commanded by Lt.-Col. J. P. P. Philipps. These were ordered in to the western part of the main beach. The reports received had been over-optimistic, and a most destructive fire met the Marines' craft as they approached the shore. Pushing on with the greatest gallantry, they suffered very heavy casualties both before and after landing. Lt.-Col. Philipps was killed while signalling the rear craft to turn back and abandon the attempt.

The Withdrawal From the Main Beaches

When it was apparent that the landing of the reserves had been without effect, and that the enemy was still in possession of the commanding headlands and directing a very heavy fire upon the beaches, it was decided to begin withdrawal at 11 a.m. At this time, accordingly, the landing craft began to go in, covered by naval bombardment and R.A.F. fighters. The enemy continued to pour down shells and bullets upon the beaches, and there were many casualties to boats and men alike. On the Essex Scottish front particularly several craft were destroyed or disabled, and only comparatively few men of this unit could be evacuated.

Corporal L. G. Ellis, D.C.M., of the Royal Regiment of Canada, who was the only man who crossed the sea-wall at Puits and subsequently returned to England.

From an oil portrait by Lieut. L. P. Harris

Brigadier W. W. Southam, commanding one of the two infantry brigades engaged, had set up his headquarters near the Casino, and throughout this period of the action he was in close touch with *Calpe* by radio telephone. At about 12:40 he coolly described the situation as he could see it, and referred to "Lieut. Millar of the Field Company, R.C.E., who has been doing a wonderful job here." "That's one for the book," he added. At one o'clock he reported the enemy "closing in" on the men still on shore.

The Force Commanders were determined to do everything possible to bring these men off. At 12:48 *Calpe* herself approached very close to the shore and shelled posts whose fire was believed to be preventing them from reaching the water. Other destroyers had previously gone close in to assist the withdrawal; one actually grounded by the stern for a moment as she turned away. As a last expedient, Captain Hughes-Hallett was taking steps to send in the shallow-draft gunboat *Locust* when at eight minutes past one a final message was received from Brigadier Southam's headquarters: "Our people here have surrendered". Many men had been left on shore, among them Lt.-Col. Jasperson of the Essex, and Lt.-Col. R. R. Labatt, Commanding Officer of the R.H.L.I., who was captured after some time in the water; both these officers are prisoners. But in spite of extraordinarily difficult and perilous conditions, a large proportion of the force had been successfully evacuated.

It is a remarkable fact that although a great mass of shipping lay off Dieppe for many hours, the enemy was able to interfere with it only to a very limited extent. Absolutely nothing was seen of the German Navy. The German Air Force was more active, but its activity, in the face of the extremely effective fighter cover provided by our own Air Forces, was less formidable than might

Major (now Lt.-Col.) A. T. Law, D.S.O., who took command of the Cameron Highlanders of Canada after the death of their Commanding Officer, and fought his unit more than two miles inland from its point of landing.

From an oil portrait by Lieut. L. P. Harris





Left:—Sergeant P. Dubuc, M.M., of Les Fusiliers Mont-Royal who penetrated into Dieppe with a small party of his unit, and, after being captured by the enemy, succeeded in making his escape and returning to England with our withdrawing forces.

Center right:—Lance Sergeant G. A. Hickson, D.C.M., R.C.E., who distinguished himself in the fighting in the Casino and subsequently took a small party of troops into the town of Dieppe.

Right:—Company Sergeant-Major J. Stewart, D.C.M., of the Royal Hamilton Light Infantry, who was one of the leaders of the party commanded by Capt. A. C. Hill, which fought its way into the town of Dieppe and maintained itself there for some hours.

From oil portraits by Lieut. L.P. Harris

have been expected. It was taken by surprise, and five hours elapsed after the first landings before its bombers began to appear. When they did appear, the R.A.F. and the ships' fire together gave them a very rough passage. In the day's air fighting, the enemy is now estimated to have lost 170 aircraft. This constituted for him a grave defeat.

The Significance of Dieppe

It is impossible to strike a balance of profit and loss on the Dieppe operation. The price paid can of course be computed, and it was high. Of about 5,000 Canadian troops, 3,371 are now listed as casualties; the figures include 667 killed or died of wounds and 218 missing, while 1,894 officers and men are prisoners of war. It is clear, too, that while we did much damage to the enemy we were not able to carry out our demolition programme in Dieppe as planned. But some commentators have overlooked the fact that many of the advantages which we gained cannot yet be described in public. A basic object of the Dieppe raid was to gain information essential to the preparation of major assault operations in the future. Important lessons were learned, and our knowledge of both the enemy's defensive system and the means of breaking it — the means too of saving the lives of many thousands of Canadian and other Allied soldiers in the future — were very greatly increased. But

we are not going to tell the enemy our conclusions.

Here just two points will be made. One is the effective co-operation and warm comradeship existing between the three fighting services; for this has never been more in evidence than at Dieppe. It was reflected in innumerable tributes to the Navy and the R.A.F. in the individual reports written by soldiers after the operation. "Some of the bravest and best are the boys in the Navy and I take my hat off to them." "The Navy sure done a good job and our air support was perfect." "I would like to pay a special compliment to all the officers and men of the Royal Navy . . . They showed a complete disregard for death and carried on as if this action was an every-day occurrence." "The Navy and R.A.F. did a superb job." "The support from the R.A.F. is well worth being mentioned, they were tops." These comments from Canadian N.C.Os. and men speak for themselves. The Canadian Army took a special pride in the work of their own compatriots among the naval and air forces.

The other point concerns the Army itself. This battle, it has been said above, was its first test in action; and the story told here in briefest outline shows how it acquitted itself. The few incidents of gallantry related could be multiplied many times over. The names of a few officers and soldiers, chosen almost at random,



have been mentioned; the names of scores could and should have been mentioned had space allowed.

Of all the aspects of the operation, one of the most heartening was the performance of the young officers who led the Canadian troops. Lt.-Col. Merritt, whose "matchless gallantry" won him the Victoria Cross, was only the first among a fellowship of leaders whose quality explains why Canadian soldiers returning from the raid spoke and wrote in the warmest terms of the manner in which they had been commanded. And the officers were not less warm in their accounts of the manner in which they had been followed; for the Canadian soldier showed beyond doubt on that eventful 19th of August that he was made of the same stuff as the men of 1914-18. Bravery he displayed in plenty; but ready initiative and resourcefulness were not less in evidence.

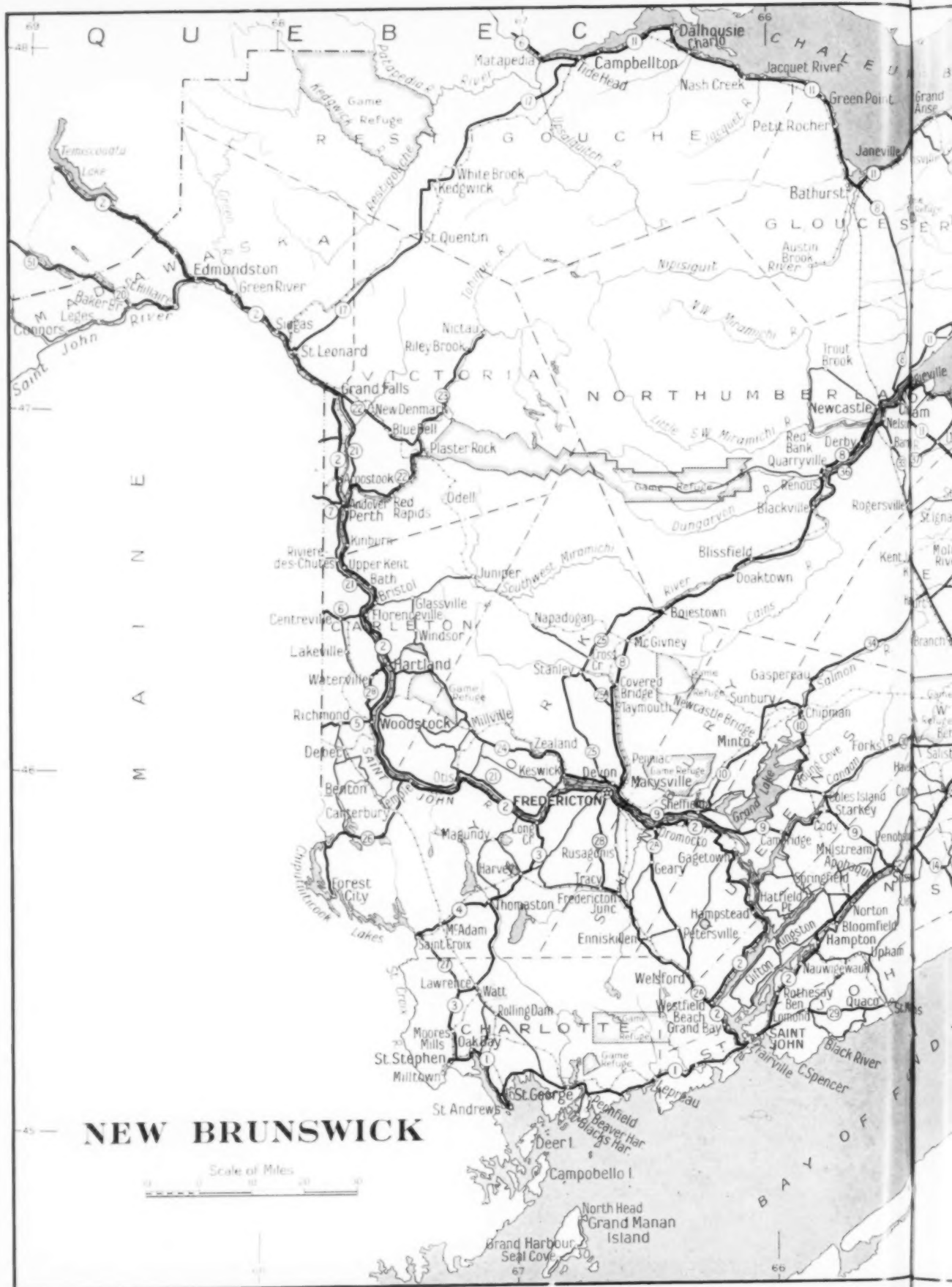
One instance where private soldiers took up the responsibilities of leadership at a critical moment has already been mentioned. Here is the simple account written by a private of the Camerons of the work of two junior N.C.Os. of his unit on the fire-swept beach: "We ran into Cpl. Keller and Cpl. Brygider and they were carrying on as an officer would do, giving orders to fire, take the wounded to the beach and a hundred other things with a very cool head." Corporal Adam Brygider

received the D.C.M. and Corporal Alexander Keller the M.M.; and their behaviour, typical of that of many, may stand as a symbol of how it came about that in the weeks following Dieppe all ranks of the Canadian Army Overseas felt a new confidence and a new pride.

Ten months after Dieppe, as this account is written, the air is tense with expectancy. Great victories have been won in Africa; and the Canadian Army, awaiting the word, looks forward hopefully to a share in equally great victories in Europe. One day's fighting in three years is a small ration, but there are vast campaigns to come; and in the events of that one summer day on the coast of Normandy the enemy may trace, if he will, an omen for the time when he encounters the men from Canada on other battlefields.

The photographs with which this article is illustrated are British and Canadian Official Military Photographs. Many of them were taken by a Photographic Officer of Canadian Military Headquarters who was on a tank landing craft off Dieppe during the action.

The illustrations also include reproductions of a selection from a group of oil portraits of officers and men decorated for bravery at Dieppe, painted by Lieut. L. P. Harris. This group of pictures will form a permanent national record of types of Canadian soldiers in the present war.





NEW BRUNSWICK, PAST AND PRESENT

by F. J. ALCOCK

MUCH has been written about the geography of the largest of Canada's three maritime provinces, and many have stressed its charm and attractiveness. Its mountains and valleys, beautiful at all seasons of the year, and especially so when they assume the glories of their autumn tints — its pleasant lakes and streams, the joy of the trout and salmon fisherman — its long line of coast with here inviting beaches and there rockbound shores in places stern and forbidding, in places offering warm red tones and locally sculptured caves and sea-stacks—its wide expanse of woods, the delight of the hunter — its pleasant homes and excellent roads, are all features with which every one who knows the province at all is familiar.

Many are apt to assume, however, that aside from the minor changes which the hand of man is continually making, the country has always been much as it is at present — that the "eternal hills" have always had their present contours, that the streams have always flowed in the valleys they now occupy, and that the waves from the beginning of time have ever beat against the same coast. Those who take an interest in the story that the rocks have to tell know, however, that such is not the case. They are aware that throughout the long ages of the past there has been an unceasing struggle between two sets of forces, one tending to build up and the other continuously at work in its efforts to tear down, and that as a result of the action of these forces, the surface has constantly been undergoing change. The building-up forces are those which one is more apt to think of as destructive—earth

movements involving uplift and folding of the rock strata and accompanied by earthquakes, volcanic activity and the intrusion of molten igneous rock at depth. It is such processes that tend to maintain the land above the sea. The destructive forces on the other hand are much less spectacular and awe-inspiring. They include the action of waves, rain, frost, streams, wind and ice which are continually wearing down the earth's surface, and,

given time enough, eventually would reduce the earth's surface to a low plain rising gently back from the sea, or as physiographers say, to a peneplain. Such a condition has been reached more than once in the long geologic history of the province.

Though the strata that are exposed at the surface to-day have a long and interesting story to tell about the history of the province, it is a story which is far from complete. Many pages of the record

TABLE OF ERAS, PERIODS, AND EPOCHS OF EARTH HISTORY

The geological formations of New Brunswick are listed and the main geological events such as times of mountain building, times when the region was above the sea undergoing erosion, and times when all or a part of it lay beneath the sea receiving sediments, are indicated.

ERA	CHARACTERISTIC LIFE	PERIOD	EPOCH	SERIES	ROCKS	GEOLOGICAL EVENT
CENOZOIC	AGE OF MAN	QUATERNARY (1,000,000 Years)	Recent		Alluvium Marine clays	Uplift
			Pleistocene		Stratified gravels Boulder clay	Region covered by ice
	AGE OF MAMMALS AND MODERN PLANTS	TERTIARY (50,000,000 Years)				Erosion Vertical movements
MESOZOIC	AGE OF REPTILES	CRETACEOUS (60,000,000 Years)				Erosion
		JURASSIC (60,000,000 Years)				Erosion Earth movements
		TRIASSIC (20,000,000 Years)		Quaco	Conglomerate	Local deposition
		PERMIAN (20,000,000 Years)				Erosion
PALAEOZOIC	AGE OF AMPHIBIANS AND LYCOPODS	CARBONIFEROUS (50,000,000 Years)	Pennsylvanian	Petitcodiac	Sandstones	Deposition
			Mississippian	Windsor	Conglomerate Limestone	Earth movements Deposition
				Horton	Sandstones Shales	Deposition
	AGE OF FISHES	DEVONIAN (50,000,000 Years)	Upper Devonian	Perry	Sandstones	Deposition
			Middle Devonian			Granite intrusion and Mountain building
			Lower Devonian		Shales and Volcanic rocks	Deposition and Volcanism
	AGE OF HIGHER INVERTEBRATES	SILURIAN (20,000,000 Years)		Chaleur Bay Series St. George Group	Limestones, Shales Volcanic rocks	Deposition and Volcanism
		ORDOVICIAN (50,000,000 Years)		Matapedia Group Tetagouche Series	Limestones, Shales Sediments and Volcanic rocks	Mountain-building Deposition and Volcanism
		CAMBRIAN (110,000,000 Years)				
				St. John Group	Limestones, Shales Sandstone	Deposition
PROTEROZOIC	AGE OF PRIMITIVE INVERTEBRATES AND ALGAE	(250,000,000 Years)		Coldbrook Group	Volcanic rocks	Volcanism
ARCHAEOAN	AGE OF MOST PRIMITIVE LIFE			Greenhead Group	Limestone Quartzite	Erosion Mountain-building Intrusion Deposition

are missing and still others are yet to be deciphered. However, from what has been learned from the rocks of the province and from those of adjacent regions the broad outlines of the main events together with many of the details are known.

It is of interest to note that New Brunswick was the first part of what is now the Dominion of Canada to officially undertake a systematic study of its geologic story. During the past year Canada celebrated the one hundredth anniversary of the founding of its Geological Survey, one of the oldest of such organizations in the world, begun in 1842 when Canada consisted of but two provinces, Lower and Upper Canada, now Quebec and Ontario. Four years earlier, however, New Brunswick had appointed a provincial geologist in the person of Dr. Abraham Gesner to undertake the study and mapping of its rock formations and to investigate its mineral possibilities. Gesner published five annual reports, 1839 to 1843, describing his investigations and conclusions. The work, where he left off, was carried forward by other provincial workers, in particular by Dr. L. W. Bailey of the University of New Brunswick and by G. F. Matthew of Saint John. After Confederation in 1867, the Geological Survey of Canada engaged these men in the summer months to carry out geological studies, and also from time to time some of the members of its permanent staff were similarly employed. Geological maps, fifteen in number, covering the entire province on a scale of four miles to an inch were issued, and, more recently, considerable progress has been made in mapping in detail on a scale of one mile to an inch some parts of the province which are particularly interesting from a geological point of view. As a result of this detailed work much new information has been collected concerning phases of the geologic history of the province.

The Province To-day

New Brunswick to-day falls into four main natural divisions. The type of topography which each exhibits is the result of

two factors: first, the character of the underlying bedrock formations, and, second, the stage to which dissection, as a result of the processes of erosion referred to above, has progressed. The first of these divisions includes the northwestern part of the province and is called the Northern Plateau. Its character may readily be seen by crossing it along the Stewart Highway running from St. Leonard to Campbellton. It is an upland region standing at an elevation of 800 to 1,000 feet above sea-level and is developed on folded Palaeozoic strata. Its most striking feature is the flat-topped character of its surface which is broken only by the valleys, such as those of the Restigouche and its tributaries, which are deeply entrenched in it.

The second division is the Central Highlands forming a belt that runs in a northeast direction through the province from the St. Croix River in the southwest corner at the Maine border to Chaleur Bay in the northeast. It is a region of flat-topped hills and ridges, the backbone of the province, culminating in the high country between the headwaters of the Nipisiguit, Miramichi and Tobique Rivers. A number of summits are over 2,000 feet in height, Mount Carleton, the highest, having an elevation of 2,689.7 feet. The region is one in which resistant rocks, chiefly granite, but including also volcanic varieties and metamorphosed sediments, predominate. It is to a large extent wooded, famous for its game, and with lakes and streams noted both for their beauty and their fishing. A canoe and waggon trip along any one of a number of attractive routes in different parts of this region in company with experienced guides—for which the province is famous—is a sportsman's joy.

To the east of the Central Highlands is a region of low relief which slopes off gently to the Gulf of St. Lawrence. It is known as the Eastern Plain and occupies almost half of the province. It is underlain chiefly by soft, nearly flat-lying Carboniferous clastic sediments.



On the little Southwest Miramichi

The fourth division lies along the Bay of Fundy. It is a region of ridges which reach elevations up to 1,400 feet and to the west in Charlotte County it merges into the Central Highlands. The underlying rocks belong to a variety of formations but hard volcanic rocks and granites of pre-Carboniferous age overlapped by Carboniferous strata are the most widespread types. In the succeeding pages will be traced the evolution of these geographic divisions.

The Archean

The history of the region is on the whole a series of alternations of two sets of conditions. At times the surface was above

the sea undergoing erosion, a condition which obtains at the present time. During other long intervals, however, shallow seas covered all or parts of it and during these periods deposits of sand, mud and lime accumulated, later to be hardened into beds of sandstone, shale and limestone. It is of interest to note that it is of these latter intervals when the sea covered the land that we know the most, for the sediments which accumulated and their enclosed fossils that tell us what the life of the time was from the record that to-day is available for study. On still other occasions the coast-line shifted back and forth as the region rose or was depressed, and the character of the material which was accumulating continually changed.

The earliest event of which there is record took place many hundreds of millions of years ago. A sea whose boundaries we do not know occupied the site of the southern part of the province, and in it accumulated great thicknesses of lime and sand. These were subsequently hardened and cemented into limestone and sandstone and still later changed by heat and pressure

New River Beach on the Bay of Fundy near Pennfield





The gorge of the St. John River at Grand Falls

into crystalline limestone and quartzite. The white rocks which one sees in and near Saint John City belong to this group to which has been given the name Green Head. The lime rocks are quarried for a number of purposes. High calcium varieties are used in the pulp industry; dolomitic types are crushed for limestone fertilizer; and considerable quantities of the rock are used for ballast and road metal.

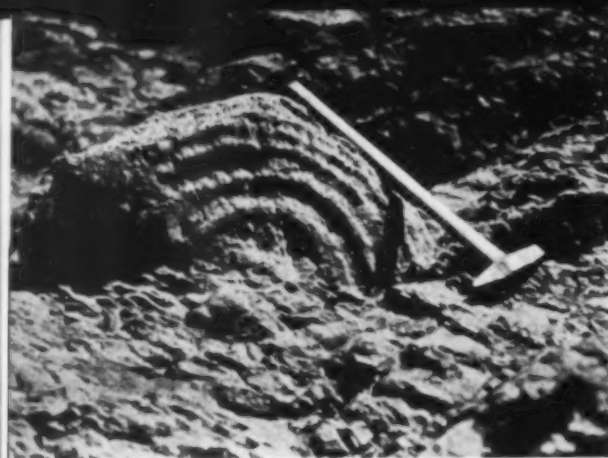
Life in this Early Precambrian sea where this material accumulated was of a very primitive type. The only fossils, which the rocks formed in it have yielded, consist of some concentric markings which have been described under the term *Archaeozoon acadiense* and which possibly represent algal growths. The localities where they are to be best seen are on the northern point of Green Head, southwest of Saint John, and on the east side of the St. John River east of Green Head.

The question of what were the rocks that formed the bed of the primitive sea in which these sediments accumulated is one concerning which no information is available. Wherever Green Head strata are found to-day in contact with underlying rock, the latter is always igneous of

younger age which came up as molten material in later geological time intruding itself into the older rocks. The original earth's crust is everywhere missing.

The Proterozoic

The Early Precambrian deposition was terminated by earth movements. The region rose, the strata that had been laid down as horizontal beds were folded, and were changed and hardened by masses of igneous material injected from below. Then followed a long era known as the Proterozoic or Late Precambrian. The region was first worn down to low relief by erosion and then came a period of great volcanic activity. Tremendous thicknesses of lava and beds of ash and coarser fragmental material blown from volcanic vents accumulated. At intervals between eruptions sediments were locally deposited but such material is insignificant in comparison with the amount of volcanic rock that was ejected. These Proterozoic rocks are exposed in the Southern Highland belt which parallels the Bay of Fundy. The rocks in the vicinity of Saint John formed during this era are known as the Coldbrook group. In Rockwood Park near the Mount



Pleasant Avenue entrance, lava belonging to this group can be seen resting on eroded upturned beds of Green Head limestone. The high country crossed on the road from Saint John to St. Martins and the Caledonian Mountain region traversed by the road from Penobsquis to Alma is largely underlain by these hard volcanic rocks. It is to a considerable extent a wooded region. Much of it which was once settled has now partly gone back into forest, the volcanic rocks providing poorer soil than most of the younger rock formations of the province.

The Palaeozoic

Precambrian time was followed by the long Palaeozoic era lasting at least three hundred million years, and it was during it that most of the rocks which now make up the surface of New Brunswick were formed. The Palaeozoic, as its name implies, was the era of ancient life. When it began, there were no land plants in existence and no land animals; of the forms that lived in the sea, nearly all were types more primitive than the related ones that live to-day. The variety and complexity of species show, however, that a tremendous amount of evolution since life had first appeared on the earth had already taken place. Of the various phyla or major branches into which the animal kingdom is divided, representatives of all, with the single exception of the chordata or vertebrates were living during the very first of the Palaeozoic periods, that of the Cambrian.

Top to bottom:—

A stromotoporoid in Silurian limestone near Jacquet River, Chaleur Bay

Carboniferous Bonaventure conglomerate resting unconformably on upturned Silurian strata, Jacquet River.

Stratified glacial outwash gravels near Saint John

Sea caves in tilted red Triassic conglomerate beds at St. Martins

During the Cambrian, arms of the sea extended over the southern part of the province and sediments which accumulated in this sea and later hardened into rock, are to-day exposed in the city of Saint John itself, and in several adjacent small areas in the surrounding region. At Silver Falls, "Laughing Water"—the Little River, has cut a canyon in these strata. The rocks for the most part are grey to black shales, but limestone zones, a grey sandstone formation, and a basal conglomerate form important units. The beds contain a considerable fossil fauna consisting chiefly of trilobites and brachiopods. Gesner in his 1840 report mentions finding fossils in these strata at Saint John, and later, Matthew, who became the great student of these rocks, gave the name Saint John group to the beds. Deposition began in Lower Cambrian time, the basal beds being a conglomerate derived largely from the Proterozoic volcanic rocks of the surrounding region. Sedimentation continued through the Middle Cambrian and the Upper Cambrian and on, apparently without a break, into the early Ordovician. On the basis of lithology and fossil content, the beds of the group have been divided into several series and the latter, in turn, subdivided into formations.

The Ordovician, the second great period of the Palaeozoic, saw all or most of the region beneath the sea during at least two great inundations in addition to the early Ordovician one referred to above. During Middle Ordovician time sediments accumulated in a sea that flooded much or all of the region, and, locally, volcanic activity on a large scale accompanied their deposition. The Tetagouche slates of the

Top to bottom:—

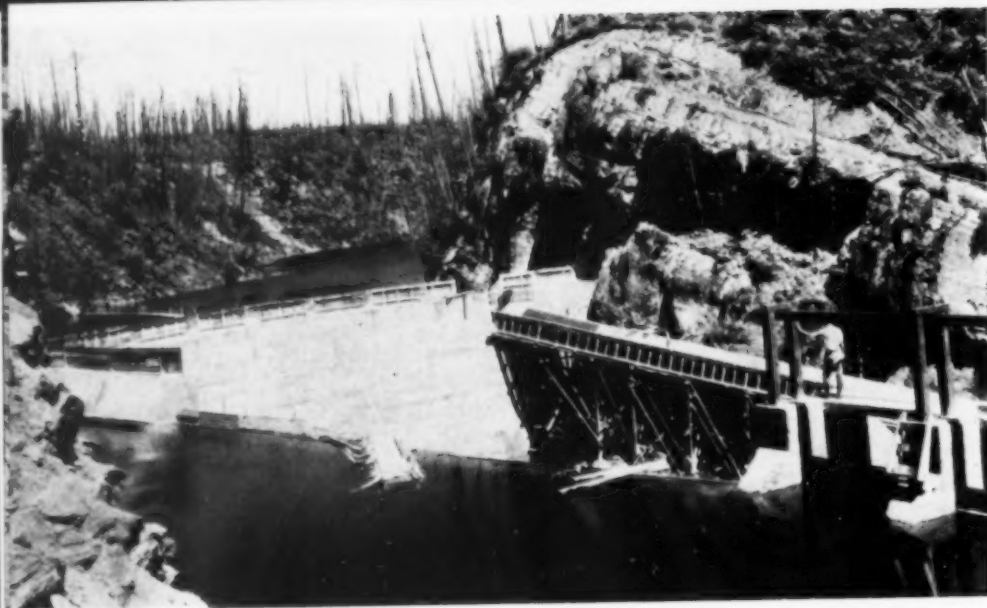
Sea caves at Hopewell Cape, Shepody Bay

The Bay of Fundy shore near Cape Spencer, ten miles southeast of Saint John

Folded Silurian strata overlain unconformably by flat-lying Carboniferous Bonaventure conglomerate, Chaleur Bay.

The Bay of Fundy coast northeast of Cape Spencer





Power dam on Nipisiguit River, south of Bathurst



Iron ore at the Drummond Mine on Austin Brook, south of Bathurst



Pulpwood ready to be converted into paper, Bathurst

northern part of the province locally have yielded a graptolite fauna of this age. Again in Upper Ordovician time, the northern part of the province at least was again submerged and a thick series of limestones and shales known under the name Matapedia group was deposited.

At the close of the Ordovician, the region was elevated and the rock strata were folded and altered by mountain-building movements. This period of deformation is known as the Taconic disturbance. A long period of erosion then followed which removed much of the surface rocks. By the Middle Silurian the mountainous topography had been worn down to one of low relief and an advancing sea once more swept over it. Deposition of Silurian beds probably took place over the entire province. They are well exposed to-day in the Chaleur Bay region, in the Saint John valley, in the St. George region of southern New Brunswick and elsewhere. The best section for their study is that at Jacquet River on Chaleur Bay, where tilted strata of this age, several thousand feet in thickness, are exposed more or less continuously along the shore for a distance of three miles. Volcanic rocks were deposited with the sediments during the Silurian, in small amounts in the northern part of the province, and in very large amounts in the southern part particularly in the region around St. George. In late Silurian time the region was once more uplifted above the sea where it again came under attack

by the surface agents of erosion. This time, however, the rocks were not folded, the upward movement being merely in the nature of a broad, gentle upwarp.

The next period, that of the Devonian, was a long and eventful one. Early in the Lower Devonian the region sank once more beneath the sea and a thick series of sediments began to accumulate. This was also a time of great volcanic activity; lava flows and layers of volcanic ash were deposited with the marine sediments in places in tremendous thicknesses. The best locality in the province where these rocks can be studied is at Dalhousie, where, on the shore at Stewart Cove, bands of sediments containing a great variety and abundance of fossils alternate with thick zones of volcanic rocks. The hilly region around Dalhousie and extending west to Campbellton is largely made up of the hard volcanic members of this series which resist erosion much better than the softer associated shales. Sugar-loaf Mountain at Campbellton is a volcanic neck, a vent along which volcanic material was extruded at that time. It eventually became filled with lava which, being resistant to erosion, survived the denudation which has since removed the surrounding rocks.

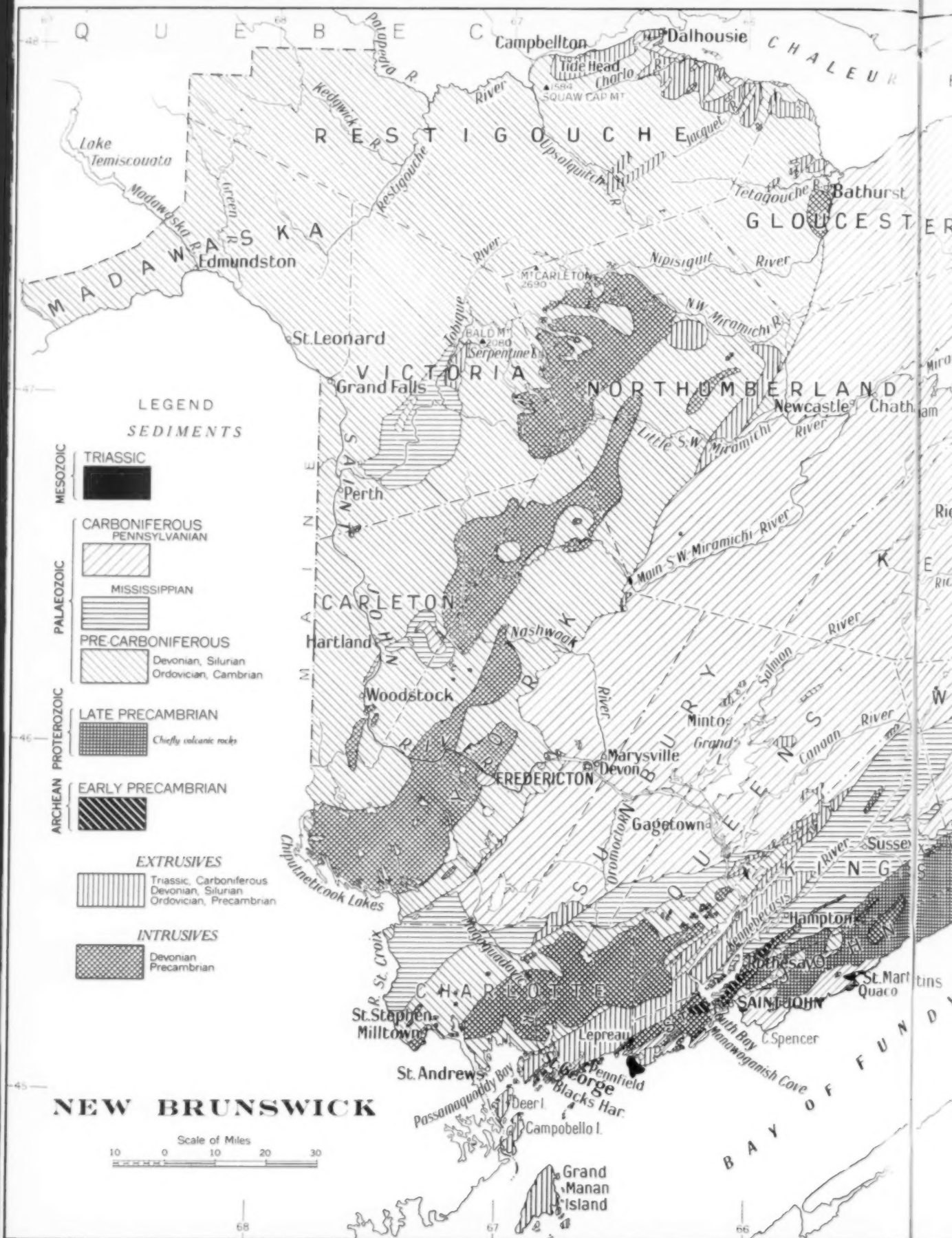
At the close of the Lower Devonian mountain-building movements once more began. These movements continued into Middle Devonian time and were accompanied by the intrusion at depth of masses of granite and related rocks. These move-

Geological Survey camp on the Charlo River, Chaleur Bay region



Travel by waggon in the northern New Brunswick woods







NEW BRUNSWICK, PAST AND PRESENT

ments raised the region above the sea, and erosion had unroofed, by late Devonian time, some of the granite masses. This is known from the fact that the Perry conglomerate of the southwestern part of the province, which, as shown by the fossil plants which it contains, was laid down during Upper Devonian time, contains numerous boulders composed of these granites. The granites in their late stages of cooling gave off mineralizers and most of the metallic mineral occurrences which are to be found in the province date from this period of intrusion.

The succeeding division of the Palaeozoic, that of the Carboniferous, was at least as long as the Devonian and was a most important time in the history of the province. It is made up of two parts—the Mississippian and the Pennsylvanian, each usually regarded as of period rank. The Carboniferous rocks cover about half New Brunswick and contain the coal, oil, gas and gypsum deposits—the principal mineral products of the province. Earth movements took place from time to time, but the great Appalachian revolution which so profoundly deformed the strata of the eastern United States at the close of the Palaeozoic had comparatively only very slight effects here.

The Mississippian rocks are best exposed in the region from Moncton southeast to Albert and southwest to Saint John on the flanks of the Caledonian mountain belt composed largely of Precarboniferous volcanic and intrusive rocks. The basal beds in places consist of a reddish conglomerate called the Memramcook, and this is succeeded by a thick series of grey shales known as the Albert formation. In places the Memramcook is absent and the Albert beds rest directly on the pre-Carboniferous igneous complex. The Albert beds are the source of the gas and oil of the Moncton region. Most of the beds contain a certain amount of oil and some of the shales are sufficiently rich to be called oil shales. An interesting mineral, known as albertite is locally present in these rocks. Locally known as "coal" it is really a solid bitumen



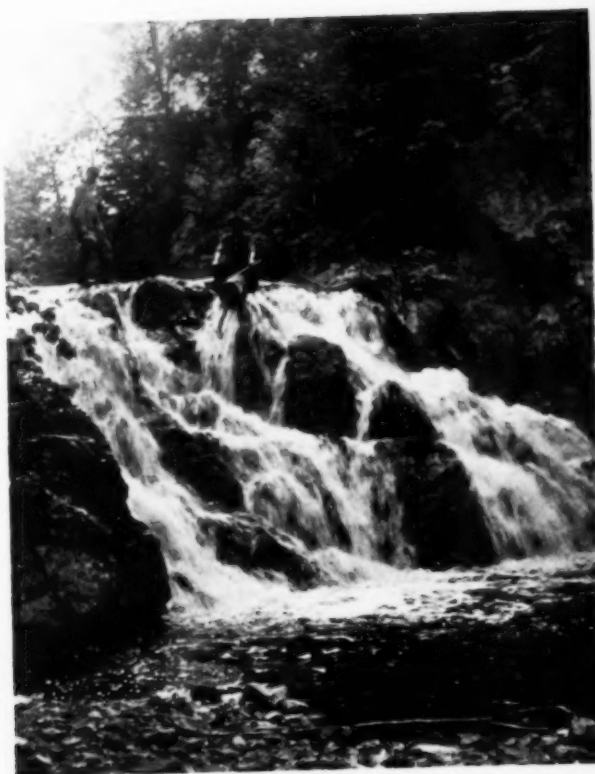
First row:—

The Tobique River above Riley Brook

Low tide at St. Martins-by-the-Sea, Bay of Fundy

A tourist camp near Saint John

Flower-pot, composed of black volcanic rock near Quaco, St. Martins.



Second and third rows:—

A view along the Serpentine River, Tobique region
A trout pool on the Charlo River

On the lower part of the Upsalquitch, a tributary
of the Restigouche

Running the "falls" of the Serpentine.

Toward the head of the Tetagouche River, a fall
over Ordovician volcanic rock

Diamond drilling oils shales, Albert Mines, Albert
County.

Fourth row:—

Serpentine Lake in the Central Highlands

A camp on Nigadu Lake, northern New Brunswick

An autumn scene in beautiful Albert County

The manager's house, old Albertite Mine, Albert Mines





Sugarloaf Mountain near Campbellton, a Lower Devonian volcanic neck



Squaw Cap Mountain from the Stewart are monadnocks of hard intrusive surrounding peneplained

and occurs as veins commonly cutting across the bedding planes of the shales. One vein of this material at Albert Mines was worked in the period between 1851 and 1880, the material being shipped to the United States where it was partly employed as an enricher in the manufacture of coal gas and partly in the making of oil. The vein had a length of about 3,000 feet, was followed to a depth of nearly 1,400 feet, and, though the width varied greatly, in places it was as much as 28 feet wide. The Albert beds are also of scientific interest on account of the numerous fossil fish which some of its beds have yielded.

Following the deposition of the Albert shales, local vertical movements took place, the shales being followed by conglomerate beds of the Moncton group. The next important event was the advance over the region of the Windsor sea in which were deposited beds of limestone and later gypsum. At the town of Hillsborough in Albert County large quantities of this gypsum are mined and prepared for market. These deposits apparently lie conformably for the most part at least on the older Carboniferous sediments but locally overlap directly on to the pre-Carboniferous volcanic rocks. Above the limestone and gypsum were deposited more reddish clastic beds which marked the closing stage of the Mississippian.

Although the Mississippian period was a time of many earth movements it apparently passed quietly into the succeeding Pennsylvanian. The transition is really marked by the appearance of the

true Pennsylvanian flora. During the early Pennsylvanian, however, local crustal disturbances took place which were followed by the deposition of the grey sandstones and pebbly conglomerates of the Petitcodiac group. These and younger Pennsylvanian strata lie for the most part horizontally or with but low dips, cover much of the eastern half of the province, and contain the latter's coal deposits.

The Mesozoic

The long Mesozoic Era when reptiles ruled the seas, land and air, was apparently a time when New Brunswick, for the most part at least, was above the sea undergoing erosion. Some beds of Triassic age occupy a few small areas along the Bay of Fundy coast, but their coarse clastic character and their red colour suggest that they were laid down on the land, probably in river valleys. The Triassic was also a time of volcanism and most of Grand Manan Island near the mouth of the Bay of Fundy consists of volcanic rocks probably of that age.

During Jurassic time faulting took place farther south in New England and similar earth movements may have taken place in New Brunswick, but since Jurassic and younger rocks are entirely lacking, there is no direct evidence of this available. During the long Cretaceous period which followed, the region was probably above the sea undergoing erosion and was eventually reduced to the peneplain stage. In this process great thicknesses of surface rocks

Stewart
intrusive
explained

Highway near Upsalquitch. The summits
granitic rocks rising above the
shale country.

The Central Highlands from Bald Mountain. Note
the even skyline marking the old peneplained surface.

were removed, and as a result broad masses of the granitic intrusive bodies which had solidified at depth below the surface were uncovered.

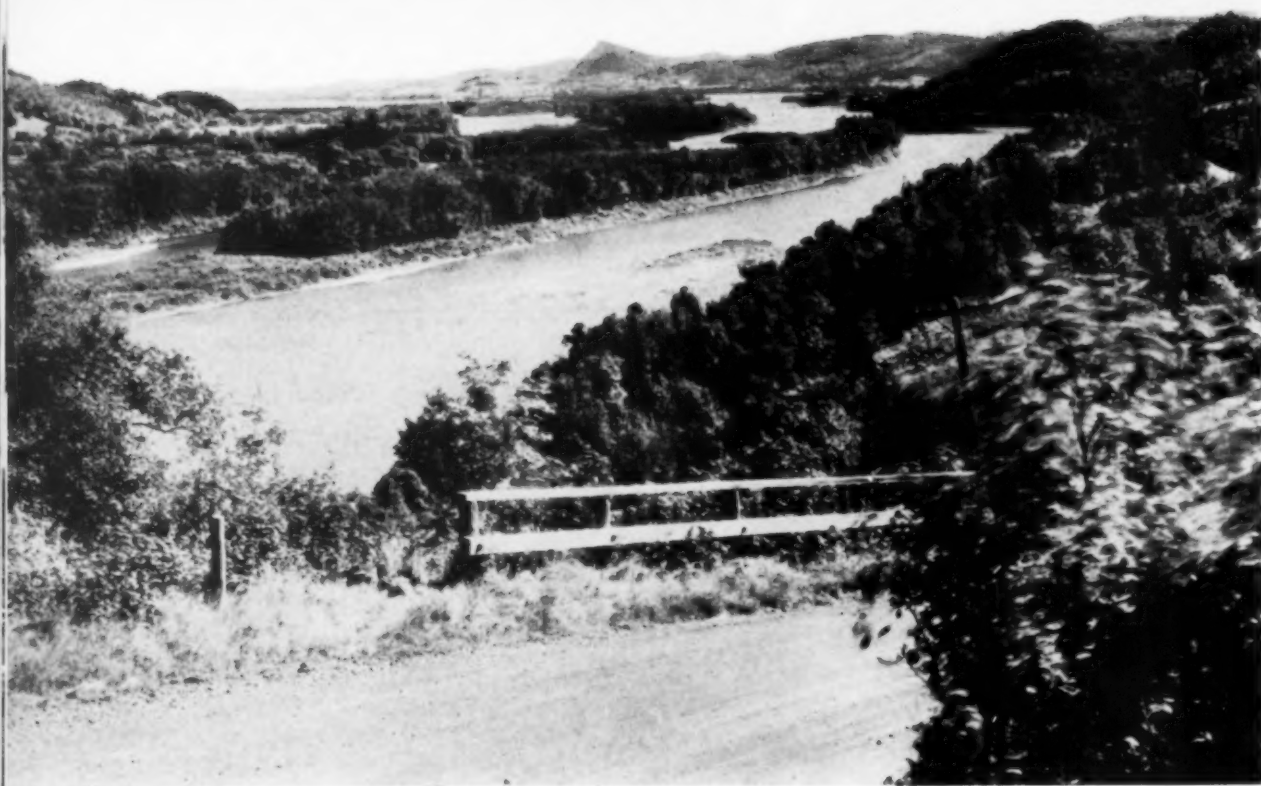
The Cenozoic

The Cenozoic era is made up of two divisions, the Tertiary, when mammals formed the dominant life, taking the place of the reptiles which had ruled the Mesozoic, and the Quarternary including the time of the Great Ice Age and also post-glacial time.

No Tertiary rocks are found in New Brunswick and during this period the region was probably above the sea. The present features of the province now began to emerge gradually. Vertical movements took place on more than one occasion, and with each uplift the streams were rejuvenated and began with renewed vigour to deepen their valleys. In time a mature topography was developed on the parts underlain by the softer, more easily eroded rocks, while areas underlain by the more resistant volcanic and granitic masses more effectually withstood the attacking forces and remain as mountains and ridges to-day. For example flat-topped summits of the Central Highlands and the Caledonian Mountain belt are relics probably of the old uplifted Cretaceous peneplain. In late Pliocene time toward the close of the Tertiary, uplift again occurred and once again the stream began to downcut. It is for this reason that to-day we have youthful steep-sided valleys entrenched in the mature Tertiary topography.

The Pliocene uplift carried the region to an elevation considerably above the one at which it stands to-day. As a result ice began to accumulate in the Central Highlands and glaciers began to move out from them. Later the whole of the province was overrun by a continental ice sheet which had its gathering ground in the heart of the Labrador peninsula. These glaciers smoothed off the rock surfaces, polished, striated and grooved them, and, by depositing debris in valleys, caused changes in the drainage, in places producing lakes and even causing streams to be diverted into new courses. As the ice retreated, streams issuing from the melting mass locally piled up gravels in layers in front of it, material now of value for road and railroad ballast.

Of the changes in drainage produced as a result of the Pleistocene glaciation, the two best known examples are on the St. John River, one at Grand Falls and the other at Saint John City itself. At Grand Falls the St. John River abruptly turns from its southerly course and makes a semi-circular swing about half a mile in radius. In this abrupt bend there is a vertical fall of sixty-five feet, and below this drop the river pours through a narrow canyon marked by nearly vertical walls of limestone and by a series of cascades. Both above and below this gorge section the St. John valley is broad and mature. Evidently in glacial times the valley was blocked at this point, and the river was forced to cut a new channel whose youthful character is in strong contrast to the original valley above and below.

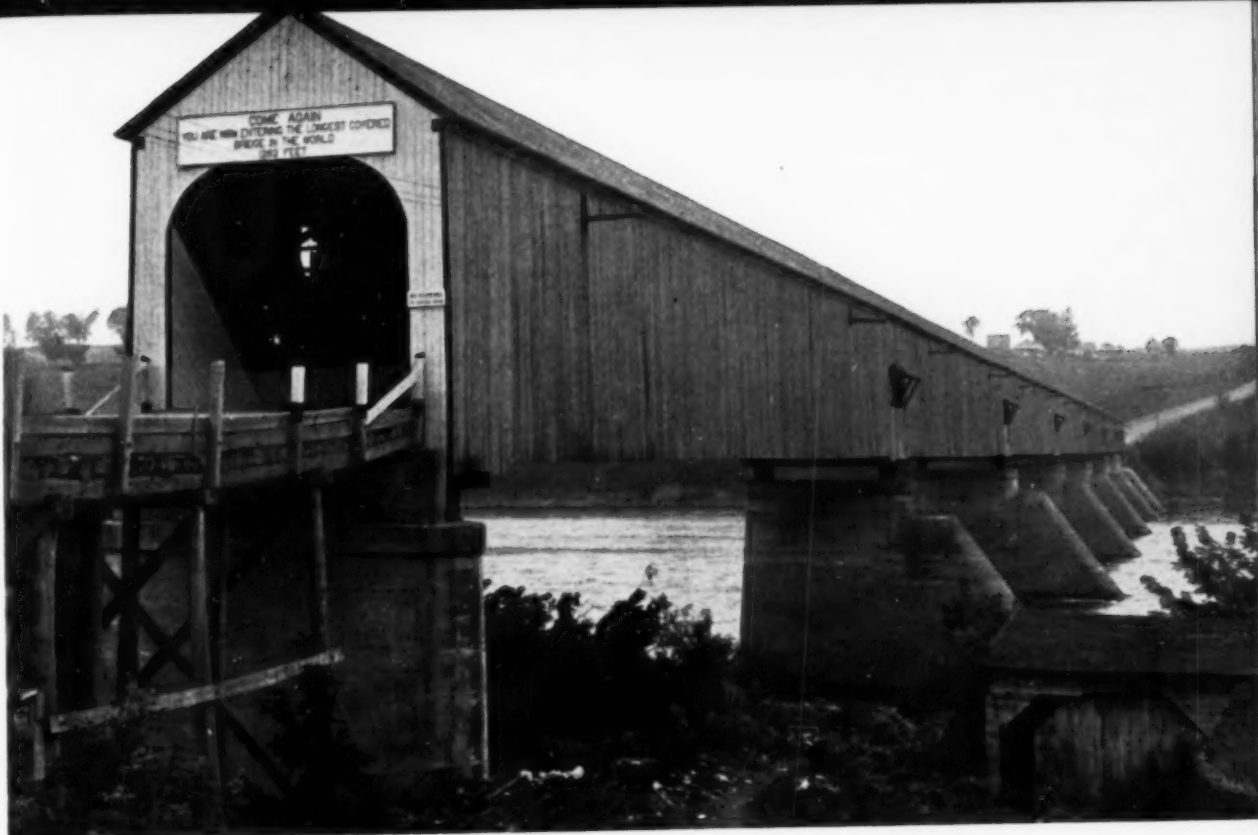


Looking down the Restigouche Valley from Morissy Rock west of Tide Head.

A shore scene near Lepreau, Bay of Fundy

Photo by G. M. Dallyn





The covered bridge across the St. John River at Hartland. "The longest covered bridge in the world"

A typical scene in the fertile St. John Valley

Photos by G. M. Dallyn



The change in drainage at Saint John City is responsible for the famous Reversing Falls near Suspension Bridge, where, at times of low tide, there is a falls downstream, and, at times of high tide, there is a falls in the opposite direction. The river here occupies a narrow rocky gorge and two miles to the west broadens to a large lake expansion, Kennebecasis Bay, into the northeast end of which the Kennebecasis River flows. The lake in places has a depth of 200 feet below sea-level, and was evidently formed as the result of the impounding of the waters of the St. John and Kennebecasis Rivers by dams composed of glacial debris. It is possible that the original course of the river was by way of South Bay and Manawoganish Cove. The overflow of the lake after damming may have reached the sea by a number of channels, but eventually the one over the low, rocky ridge at Suspension Falls became the established one.

The weight of the great mass of Pleistocene ice caused the whole region to subside and when the glaciers eventually melted and disappeared the coast topography was a drowned one, that is, the shoreline was much more irregular than it had been during the long periods of

quiescence between the times of uplift. Two arms of the sea invaded what formerly had been broad river valleys producing the Bay of Fundy and Chaleur Bay, and every minor stream which reached the coast also had at its mouth a sea arm on a smaller scale. The waves and tides, however, began immediately to endeavour to smooth out these irregularities. The projecting point of land receives the heaviest attacks and the eroded material becomes transported along shore to the intervening bays, there to produce bars and beaches. The effects of the waves on the cliffs can well be observed at such places as St. Martins-by-the-Sea and Hopewell Cape, where sea caves cut in the softer strata, and sea-stacks and flower-pots, harder sections of rock which have resisted erosion while the surrounding masses have been worn away, bear witness of the relentless and unceasing attack.

The coast thus, like the land surface, is continually undergoing change, passing through stages of youth to old age. In the case of the land surface, the end phase, as has already been pointed out, is the peneplain when all the country is finally eroded down to a surface of low relief rising gently back from the sea, the only prominences being a few hills which owe their existence either to the resistant character of the rocks which composed them, or to their favourable location on divides where erosion is at a minimum. In the case of the coast the cutting back of the headlands and the filling up of the bays produce in the end phase a regular shoreline of broad gentle curves whose initial irregularities have been smoothed

Rosevale region, Albert County, on the flank of the Caledonian Mountain belt. The high land on the right is composed of Precambrian volcanic rocks, that on the left of hard Moncton conglomerate. The lower country between is underlain by an intervening formation of softer shales of the Albert formation which affords better soil.



Bald Mountain in the Central Highlands near Riley Brook. A monadnock of hard acidic intrusive rock rising above the surrounding plateau surface.



out. At present, owing to the comparatively short time, geologically speaking, since the retreat of the Pleistocene ice, the land surface and coast are both to a large extent in a youthful stage of this development, but, given time enough, the orderly development will continue to the inevitable end. Like the mills of the gods, the forces of erosion grind slowly, but their effects are exceedingly sure.

The above brief outline of geologic events summarizes in a word the succession of geographic changes which the province has undergone throughout its long history. Mountains and mountain ranges have been built and have disappeared, volcanoes have been active and become extinct, seas have advanced and have retreated, glaciers have covered the entire region and have melted, and life both in the sea and on the land has shown a steady evolution toward higher and more complex types. The record of these changes has been left largely in the rocks and their enclosed fossils, but partly also in the character of the surface of the region as we see it to-day. The record, however, has to be interpreted and its unravelling, often from rather scanty evidence, is a fascinating task. The task is still, however, far from completed. Many clues still remain to be examined and explored before the story can be told in full.

Reversing Falls, New Brunswick

Top:—Suspension Bridge, Saint John

Centre:—Suspension Bridge, flood tide

Bottom:—Suspension Bridge, at low tide

Photos by G. M. Dallyn





The pattern of her rug is outlined and she is beginning to fill in details and the background. Macdonald College

TEACHING HANDICRAFTS IN CANADA

A Brief Historical Review

by IVAN H. CROWELL

IN his *Nova Francia* of 1606, Marc Lescarbot* wrote that certain tribes of Indians "do make pictures of beasts, birds and men as well in stone as in wood. "In Port Royal, and in the confines thereof, and towards Newfoundland, and at Tadoussac, where they have neither pearls nor vignols, the maids and women do make matachias (personal ornaments) with quills or bristles of the porcupine, which they dye with black, white and red colours, as lively as possibly may be." Lescarbot speaks also of several other hand crafts

carried on by tribes both in North and South America.

These arts and crafts were handed down from generation to generation since time immemorial and spread slowly from place to place with changes very conservatively taking place. The stages of nicety which these crafts reached indicate their very great antiquity.

The formal teaching of handicrafts to classes or groups had its beginning in Canada in 1639. "Among the pioneers of civilization in the new world, the Ursulines

*From the translation by P. Erondelle, 1609



A group of Quebec craft products are shown in this photograph. They include furniture making, tapestry work, pottery, rug hooking. The chair seat is woven from elm bark.

might be said to occupy the front rank. These nuns not only contributed much to the civilization of the Indians, but they trained Indian girls in handicrafts and fine arts with a perseverance worthy of admiration. Their cultural influence, initiated as early as 1639, has since spread under disguise from their cloister to almost every point on our continent."[†]

Among the early arts and crafts taught by the Ursulines were needlework — especially embroidery, music, painting, drawing and architecture. The church absorbed much of their exquisitely fine needlework. Their work was often done in gold, silver and silk threads—rare and costly elements centuries ago. Later poverty forced the nuns to adopt their work more to the

practical needs of the people and to use local native products as sources of raw material. Wooden and birch-bark dishes and bowls were commonly made. For more ornamental articles, the Ursulines substituted coarse threads, plain and dyed moose hair and porcupine quills. Later they taught French-Canadian girls to gild carved wooden statues, to make fine tooled leatherwork, to do bookbinding; they also made artificial flowers, wax fruit, hair pictures and paintings.

[†]Barbeau, M. 1936, *Quebec, Where Ancient France Lingers*, Macmillan

Children in every school in Canada can carry out many creative handicraft projects on the school desk as is being done at the St. Avila Rural School, Manitoba.





A variety of beautiful hand-tooled leatherwork.
Mount Allison University.



Some exquisitely fine vases and models are brought
together here. Mount Allison University

Nor were the young men of the early communities long in need of training in handicrafts. Mgr. de Laval, first bishop of Quebec, founded the Seminary of Foreign Missions, now the Séminaire de Québec, in 1668. In 1675 he established a branch of the seminary at Cap Tourmente, for the teaching and practice of arts and handicrafts. Such practical crafts (essentially trades) as tailoring, shoemaking, masonry, roof work, carpentry, joinery, lock making, painting and wood carving were taught.

Most of the teaching masters of the

school as well as the constructors of the seminary eventually settled in the new colonies and practised their calling. They established families which spread the traditions and talents of craftsmanship far and wide on this continent.

Other schools of handicraft were in operation more than two centuries ago. Notable among them was that of Madame de Repentigny. This worthy lady foresaw distress creeping upon the people of her province because of the impossibility to obtain sufficient manufactured goods. In 1706 she organized the people about her and initiated the first "Made in Canada" home industry. The men constructed spinning wheels and looms and women wove cloth, enough to greatly relieve locally a widespread desperate shortage and the entailed sufferings that surely would have followed.

Though conditions which brought about the shortage of 1706 were different, it is interesting to observe that the results of



Fine examples of bookbinding. Ontario College of Art



Soft metalwork, suitable for grade 7 and older.
Vancouver School Board



Fine examples of various crafts done by Mount Allison University students are on display.

the 1943 shortage are much the same. The solution, in considerable measure, is also comparable to that of 1706, for through handicrafts we can, and many are making numerous necessities of life which industry can no longer find time, workers or equipment to manufacture, nor our transportation systems to distribute.

Teaching Handicrafts in Canadian Universities

The teaching of handicrafts in Canadian universities began, it seems, about 1904 at Owen's College of Fine Arts of Mount Allison University in Sackville, New Brunswick. The course, offered as it is within the faculty of fine arts, has the distinct advantage of combining the activities and interests of artists and craftsmen. For many years Mount Allison seems to have been the only Canadian university to offer courses and give certificates of proficiency in handicrafts.

Since 1917, Mount St. Bernard College

of Antigonish, Nova Scotia, has offered training in several crafts. From time to time additional crafts were introduced, so that at present their programme appears to be one of the most comprehensive in Canada. At the completion of the three-year course, students are awarded a diploma which is recognized by the Nova Scotia Department of Education for the purpose of obtaining a licence to teach crafts in the province.

The outstanding work done by the Extension Department of St. Francis-Xavier University, also of Antigonish, call for special recognition. For several

These belts were made by card weaving. Truro, Nova Scotia, 1941





Above:—Altar frontal of the Nativity, 37 by 90 inches. Silver, gold and coloured silk threads mostly in relief; coloured stones inset; the background is in silver thread. Made in the eighteenth century at the Ursulines Convent, Quebec.

years this department has carried on active handicraft projects among rural adult education groups and study clubs in the northern part of Nova Scotia. Since 1935 women's study clubs have been encouraged to take an active interest in handicrafts and to share with others the knowledge of crafts known only by certain individuals.

Below:—Chasuble of the Jesuits, gold and silver threads embroidered on a gold background. Some of the flowers are of coloured silk. Weight about 30 pounds. Made at the Ursulines about 1720. Courtesy O. A. Beriau and M. Barbeau



The success of these remarkable programmes has brought meritorious recognition from far and wide.

Within the past five years the teaching of handicrafts has made amazing strides in several of our other universities. The Universities of British Columbia, Alberta (Banff School of Fine Arts), Saskatchewan, Manitoba and McGill (at Macdonald College) have established handicrafts in their summer schools, extension departments or adult education services. Weaving seems to be one of the most widely taught crafts, although design, pottery, leatherwork, rug-making, woodwork, block printing, basketry and others draw much attention. Some of these institutions have prepared excellent, well illustrated bulletins on certain crafts as glove making, weaving, rug hooking, how to make small looms, etc.

The major aims of most of these projects is to teach handicrafts to students and adults for their creative and artistic values. Some of these institutions carry their work to rural areas, where handicrafts have been introduced as a means of beautifying and enriching the home and increasing the standards of living. This is accomplished by the results of craft work which is carried on at leisure hours by members of farm families especially during long rather slack winter seasons. Although beautifying and enriching the home and life are the major benefits derived from most rural handicrafts, in many instances a surplus of products has been sold which very effectively supplemented family incomes.

As an adjunct to the principal activity of teaching handicrafts to students and staff members at Macdonald College, an experiment in students' earning by the sale of high quality handicraft articles has been in progress for the past few years. Results



Altar frontal of gold and silk embroidery on red velvet. Made at the Ursulines early in the eighteenth century.
Courtesy O. A. Beriau and M. Barbeau

indicate that by carefully selecting the types of articles to be made, both men and women students can earn at rates well above that commonly paid for washing dishes, waiting on tables, tending furnaces etc., as so many of our talented youth are often forced to do to pay for their higher education. The social surroundings with other students and staff members and easier working times and shorter hours are far superior to that which can be offered at such jobs as mentioned above.

On July 12 of this year the Canadian Red Cross hospital handicrafts course began at Macdonald College. Young women learn to make equipment as honeycomb, cradle, inkle looms, rug hooks and frames, leather stamping tools, and glove patterns, etc. Then they learn how to use, as well as teach the use of these and other tools and equipment. After the completion of the ten weeks' course, the plan is for these young women to go overseas and teach handicrafts as diversional activity to convalescing patients in armed forces' hospitals.

The University of Toronto holds a unique position in the teaching of handicrafts. This institution gives the only accredited course in occupational therapy in Canada. This very important field of craft work is the subject of a special article to appear later in this series.

Teaching of Handicrafts in Public and Technical Schools

It would be impossible in the space of this article to tell of more than a fragment of the handicraft teaching programmes in common, high, technical and vocational schools in our various provinces.

Manual training is taught in all provinces. Thousands of boys, and many girls too, attend classes regularly. Years ago,

woodwork was the only or principal craft taught in manual training classes. It all too frequently consisted primarily of a standardized set of Sloyd models. More recently outstanding advancements have developed. The Sloyd models gave way in the higher grades to more original and useful articles. Some pieces of furniture produced by high school students compared favourably with the excellent quality of many pieces produced in our technical and vocational schools.

In another line of advancement additional crafts were introduced into the manual training course. In some of our schools, these changes have reached so far that the usual meaning of manual training—woodwork—is no longer applicable. A listing of the amazingly wide range of crafts taught in schools in our various provinces includes basketry, bead work, bookbinding, cabinet making, drafting, forge work, general shopwork, glove making, jewelry, knitting, leatherwork, lino-block printing, metalwork, needlework, paper and pastel board work, pottery, printing, raffia work, rope knotting, rug hooking and rug weaving, sewing, soap carving, weaving, wood carving and wood turning.

Still another line of advancement is foreshadowed. Several years past, only children in the larger centres of population could be given advantages of craft programmes, even of manual training in its narrower sense. At present, however, some provincial departments of education are making historic contributions to the craft education of its youth, especially in rural districts. Recently Nova Scotia began using a travelling motorized workshop that attracted wide attention by youth and adults locally and abroad. A bulletin from the Technical Branch of the Department of



A zoo of wooden animals. They are painted true to life with water colours. Macdonald College



Leatherwork is one of the most varied of crafts. Note the range of articles, types of workmanship and kinds of leathers. Macdonald College

Below:—Much thought, skill and patience have been devoted to designing, making and polishing these turned wooden articles.
Macdonald College

Canadian Pacific photos





Basketry has long been a popular craft. Summer School, Truro, Nova Scotia

Shell craft. Macdonald College

Canadian Pacific photo





Education, Manitoba, gives extensive details for starting handicraft programmes in small rural schools. It has been shown that a wide variety of crafts can be taught in the rural school classroom.

Numerous photographs of the excellent hand work of children attest the fact that many of them have remarkable latent talent. Give them proper tools, a bit of material and sympathetic instruction and the results will doubtless please all beyond measure.

Behind these rapidly expanding movements lies the striking fact that a great majority of our youth will earn their future livelihood by the skilful use of their hands. Although this fact has long been known, a relatively small proportion of our educational efforts is even yet directed toward preparing our youth for this vital phase of their future.

Craft work, bordering on or actually part of professional or trades courses, is carried on by technical and vocational schools in nearly all our provinces. Day and evening classes are regularly held by these schools.

As part of the Dominion-Provincial Youth Training Programme, instruction in handicrafts was given to men and women especially in the rural sections of our provinces. Large numbers of persons took advantage of the many classes held in a wide range of crafts. Due to the fact that so many of our boys and girls are now actively engaged in war work or have enlisted in the armed forces, the programme has been temporarily discontinued in many sections.

In addition to these several Dominion or provincial teaching programmes, our story would not be complete without some recognition of the many private instructors who teach others while actively carrying on their craft business in the larger centres of population. These people often teach and practise highly individualistic types of the finest quality of crafts.

Top:—They are making gloves for themselves and as Christmas gifts. Macdonald College

Bottom:—Women can turn bowls just as well as men. Macdonald College

Top right:—Would-be masters and mistresses of stagecraft shown in action at the Banff School of Fine Arts. Under the watchful eye of Dr. Frank Whiting the lads and lasses learn the fine points of setting up stage equipment for their major dramatic production "Watch on the Rhine". Thirty-seven students are engaged in stagecraft study at the summer school where classes are conducted by the University of Alberta's Extension Department.

Canadian Pacific photos

Centre:—A potter and a vase both in the making. Mount Allison University

Lower right:—Give us the tools, a bit of material and sympathetic instruction, and we'll finish the job. Ottawa, Ontario





Other Handicraft Teaching Organizations

In addition to those already mentioned, numerous other organizations are making notable contributions to the teaching of handicrafts in Canada. Outstanding among these is the Division of Handicrafts of the Quebec Department of Agriculture. This remarkable organization, headed by Mr. O. A. Beriau, has a membership about 35,000 in 785 farm women's clubs. The members and past members of these clubs are reported to own some 100,000 spinning wheels and 60,000 looms — mostly of the foot power 45-inch wide type. The stabilizing and cultural influences of this provincial programme on the agricultural population of Quebec has gained much widespread favourable comment.

Departments of agriculture or education in other provinces also carry on limited handicraft teaching programmes chiefly among the rural populations. Two of the major obstacles to greater service to farming populations in some districts are the thinly scattered homes and long travelling distances for instruction. These obstacles may be overcome in large measure by radio instruction and clearly worded, well illustrated, self-teaching manuals. Such manuals in various crafts are now being prepared.

Numerous other organizations carry on extensive handicraft teaching programmes. Among them are the Y.M.C.A., Y.W.C.A., Canadian Legion Educational Services, Boy Scouts, Girl Guides, The Red Cross, Women's Institutes, Youth Training Programme and the Canadian Handicrafts Guild. One private business, the Searle Grain Company, conducts weaving classes among rural populations of Manitoba and Alberta.

Several magazines, daily and weekly newspapers regularly publish columns on handicrafts, and issue separate or special reprints of certain articles, patterns, etc. The centre of this activity seems to be in our prairie provinces. Canadian periodicals in English and the several languages of our new Canadians participate in this means of disseminating knowledge.

It seems that the time is nearly ripe for the uniting of these numerous teaching programmes and organizations in support of a high quality Canadian periodical devoted to handicrafts.

Top:—A wide range of provincial handicrafts are displayed in a beautiful setting in the Parliament Buildings, Quebec

Centre:—A hand-made Chippendale chair. Macdonald College
Canadian Pacific photo

Bottom:—An industrious manual training class. Manitoba

EDITOR'S NOTE-BOOK

Major C. P. Stacey, author of "Dieppe, 19 August, 1942" is the Historical Officer at the Canadian Military Headquarters in England, who has made a special study of the relationship of military policy and operations to Canadian history. As an undergraduate in the University of Toronto, the author belonged to the Canadian Officers' Training Corps, and also served in the ranks of No. 2 Signal Company, Canadian Corps of Signals, obtaining his commission in that unit in 1925. After being granted his B.A. by the University of Toronto, Major Stacey proceeded to Oxford University on a Parkin Scholarship, and while there, 1927-1929, he was attached to the Oxford University O.T.C. and attended camp and took part in Southern Command Training at Salisbury Plain with the 3rd Divisional Signals (Royal Corps of Signals). On receiving his B.A. (Oxon), he was appointed to a fellowship in the Graduate School of Princeton University where, in 1931 and 1933, he was granted the degrees of A.M. and Ph.D. in history. Major Stacey was a member of the teaching staff of Princeton University from 1934 to 1940. His present office carries with it the important function of augmenting the historical records and war diaries of military units by obtaining historical information at first hand, and preparing such material for the future use of the official historian of the Canadian forces overseas.

F. J. Alcock, whose authoritative article, "Around Gaspé", elicited such extensive comment throughout Canada and in the United States, contributes in this issue a further memorable article dealing with the results of many years of research and entitled "New Brunswick, Past and Present". Most of the photographs used were taken by the author, and the accompanying maps and chart were made by the Society's cartographer under his instructions. Dr. Alcock's work as geologist on the staff of the Geological Survey of Canada has taken him into many parts of the Dominion; a graduate of the University of Toronto and of Yale University, he is the author of numerous geological reports and articles.

Ivan H. Crowell, the writer of "Teaching Handicrafts in Canada," taught manual training in Nova Scotia schools for several

years before studying science in Canadian and United States Universities. After graduating from College, he continued his former interest in woodwork as a hobby.

Some years ago he combined his craft interests with his sympathy for helping students, particularly in helping them secure employment of cultural character. This personal project, which was carried on as extra-curricular work at Macdonald College, attracted far wider attention than anticipated. In a few years the project grew into a full Division of McGill University at Macdonald College. Dr. Crowell has recently been appointed its first Director.

The principal projects under his direction include teaching handicrafts to students as part of the degree course; to students, staff members and townspeople as a hobby. He is also the Administrator for the Canadian Legion Educational Service Handicrafts Project.

Recently he organized and is now directing the Canadian Red Cross Diversional Handicrafts training course. In this course selected young women are being trained to teach handicrafts to convalescing members of our armed forces in hospitals overseas and in Canada.

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Chile — A Geographic Extravaganza by BENJAMIN SUBERCASEAUX, translated by Angel Flores. (The MacMillan Company.....\$3.50).

This book is a racy and informal sort of geography written in a rather impressionistic style. The author, Senor Subercaseaux, is quite obviously not a geographer but rather one who knows his native country intimately and who has made it a pleasant duty to tell the world about its mountains and deserts; its fertile central belt and the country of forests, lakes and fjords to the south.

It would appear that the book has suffered greatly in translation. In many cases an obviously wrong word has been used, obscuring the sense of the text. The translator seems to have had a preference for words not generally current in the language and in numerous instances has not used them too successfully, leaving the reader with a feeling that he shows little appreciation either of the author's intention or of geography.

A good map conveniently placed for reference would enhance the book, as the end map is by no means satisfactory and does not show many places mentioned in the text.

P. E. P.

The Canadian Born in the United States. An Analysis of the Statistics of the Canadian Element in the Population of the United States 1850 to 1930 by LEON E. TRUESDELL. (New Haven: Yale University Press. Toronto: The Ryerson Press. London: Humphrey Milford: Oxford University Press for the Carnegie Endowment for International Peace: Division of Economics and History. 1943). Pp. xvi, 263. Maps, tables, figures, diagrams. Price.....\$3.50.

The contents and purpose of this valuable book are clearly indicated by the sub-title, but the title itself, for lack of a guiding hyphen, is a trifle ambiguous. General statements about the migrations of peoples, and somewhat tenuous hypotheses built upon such statements, are all too common; detailed analyses of definite migratory movements, such as we have here, are all too rare. It is a volume which can hardly fail to be of the greatest interest to Canadians whether resident in the United States or in Canada.

It has long been known that migration of our citizens to the United States constituted a serious drain on our population, and accompanying this knowledge was a belief that it was our most promising young people who left the land of their birth in search of larger opportunities. Just how important this tendency actually is appears from the findings of Dr. Truesdell who, incidentally, is not Canadian-born.

In 1930, the latest year discussed, there were in the United States 1,286,389 Canadian-born, approximately nine per cent of the present population of Canada; there were 3,337,345 people of Canadian stock (that is, with one or both parents Canadian) in the United States, approximately one-third of our present population. Of the Canadian-born there were 370,852 of French-Canadian origin, and 907,569 English-speaking, or rather, non-French-Canadian, for with them are included 5,817 Negroes, 1,969 Indians, 38 Chinese, 45 Japanese, 91 Mexicans, and 8 "others". The proportion of the two largest groups is about the same as in Canada itself. A little over half of them have become naturalized.

(Continued on page X)

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(Continued from page IX)

It is reasonable to assume that these people moved from Canada to the United States in the hope of "doing better" than they would at home, and there appears to be a general indication that they are not disappointed, for no less than 50.4 per cent of the English-speaking group own the homes they are living in, as compared with 46.8 per cent for all families in the United States.

Most of the Canadian-born are concentrated in the New England States, about Detroit and Chicago, Seattle, San Francisco and Los Angeles. More than half of them are in 23 of the 3,100 counties into which the United States is subdivided. Most of them (77.3 per cent) live in cities. The French-Canadian group is concentrated in the northeastern corner of the New England States.

No detailed occupational statistics have been published since 1910, and Dr. Truesdell, while naturally regretting this fact, is of the opinion that "economic conditions — or at least conditions affecting choice of occupation — were not radically different in 1910 from those obtaining in 1930". He finds that in "the 16 Northern and Western States in which most of the Canadian born are found — appreciably larger proportions of the Canadian born are found in skilled and semi-skilled occupations than the total number of gainful workers in the 16 States". In the English-speaking professional group, in the same area, are found 6.9 per cent of the Canadian-born as compared with 5.2 per cent of all workers.

There are no less than 4,562 listed as physicians and surgeons. Midwives and chambermaids are the only groups with no male representatives, while some 46 persons are listed as "fortune-tellers, hypnotists, and spiritualists". One solitary English-speaking Canadian-born woman adorned each of the following professions: Chauffeur (in 1910), longshoreman, glass-blower, iron-moulder, wood-carver, scissor-grinder, and hack-driver.

DOUGLAS LEECHMAN

The Indian Speaks by MARIUS BARBEAU and GRACE MELVIN. The Caxton Printers, Ltd., Caldwell, Idaho, and The Macmillan Co. of Canada, Ltd., Toronto, Ontario. 1943. Pp. 117.

In the field of Canadian science and letters Monsieur Barbeau occupies a distinguished, and indeed unique, position. He is an ethnologist of distinction with many serious studies of Indian life to his credit; he is an historian and student of music who has preserved from oblivion many of the folk melodies of the Province of Quebec; he is an analyst and a recorder of the crafts of Quebec, in wood, in metal, and in textiles; he is a student of design, Indian and early European. Perhaps this last aspect of his work is the one which colours most strongly all of Barbeau's activities; he looks at what he is studying — and what he is studying is everything which comes in contact with the eye of the artist.

Over the course of years, Barbeau has realized to the full the dramatic elements in Indian mythology, as well as the scientific fact that the oral traditions of a people show objectively the things in which they are interested. Making use of material collected by himself on the West Coast, on the prairies, and among the descendants of the Hurons, as well as a few earlier traditions, Barbeau has

brought out a volume of short legends. The themes are varied although many of them deal with post-European incidents, particularly in regard to religious experiences.

I have named the senior author first, but indeed, this work is as much Grace Melvin's as it is Marius Barbeau's. The artistic aspects overshadow the strictly ethnological; the stories have been selected largely for their dramatic appeal and it has been the privilege of Miss Melvin to use her high artistic ability, great originality and imagination to illustrate the themes. The result is what one would expect—a delightful volume, with attractive illustrations. The authors would be the first to admit that the volume does not cover all aspects of Canadian Indian mythology; the selection includes only short tales, and, from among these, only those which readily lend themselves to the comprehension of the European reader. It is not a series representative of all types of Indian folk-tales.

The influence of west coast art is apparent in the illustrations throughout the volume, irrespective of the area from which the stories came. Artistically, Miss Melvin has been wise to retain her own style, but scientifically this is somewhat misleading. However, this volume has greater significance in the realm of art than in the realm of strict science. It will be read with pleasure, and through the tales and the illustrations the reader will receive an introduction to the wealth of Indian legends.

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